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AMERICAN MEDICAL ASSOCIATION

Profile of Medical Practice 1978

Revised Edition

John C. Gaffney
Editor

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Foreword

This is the seventh annual edition of Profile of Medical Practice. Profile and its companion volume, Socioeconomic Issues of Health, provide health professionals, policy-makers, and researchers with analyses of issues in health care delivery as well as with current health care data.

Articles in Profile are oriented toward the economics of medical practice. To present a range of views, Profile contains papers by authors in the research community at large as well as by health researchers within the Center.

Data presented in Profile are largely derived from the Center's ongoing survey, the "Periodic Survey of Physicians" (PSP). The scientific sampling design employed in the PSP as well as the Center's careful monitoring of data collection and processing make the PSP figures tabulated in Profile reliable indicators of the economics of medical practice in the U. S.

The Center hopes that the seventh edition of Profile proves useful to all those with an interest in the economics of medical practice.

Lynn E. Jensen, Director
Center for Health Services
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Part I—Patterns of Medical Practice

The articles of this section are intended to provide an overview of recent trends in the practice of medicine. Topics include the malpractice "crisis," physician reimbursement and work patterns, physician location, trends in physicians' fees, and the economics of office practice. All articles in this section were written by staff members of the AMA's Center for Health Services Research and Development and, with one exception, are based upon AMA data. However, the views expressed in these articles are the authors' interpretations of the issues discussed and are not intended as statements of AMA policy.

The AMA's recently completed Eleventh Periodic Survey of Physicians (PSP11) collected information on the ways physicians have responded to the rising incidence of malpractice suits and rising premiums for professional liability insurance.[1] In "The Malpractice Insurance Situation and Its Effects on Medical Practice," Sharon Henderson uses data from PSP11 to focus on the implications of the malpractice "crisis" for health care costs, particularly physicians' fees.

The trend of physicians providing services in other than the solo, fee-for-service setting may have implications for the availability of physicians' services. Joel Bobula, in "Physicians' Work Patterns Under Alternative Methods of Reimbursement," examines the relationship between the methods under which physicians are reimbursed and their work patterns. The article employs data from the AMA's 1973 Periodic Survey of Physicians.

Access to health care resources has been a persistent concern of health care researchers. In "Patterns in Geographic Location of Physicians, 1968-76" Peter Way uses data from the AMA's Physician Masterfile to analyze recent patterns and trends in the location of physicians. The study focuses on relative changes in physician-population ratios by state for three groups: primary care, secondary and tertiary patient care, and nonpatient care physicians.

In "Relative Changes in Physicians' Fees: Evidence From the Consumer Price Index," Philip Cotterill updates an article of the same title from last year's Profile. Trends in the physicians' fees component of the Consumer Price Index are analyzed with special attention to the last two years.

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[1] See the Appendix to this volume for the actual survey questions on the Eleventh Periodic Survey of Physicians.

Using data from the AMA's ongoing Periodic Survey of Physicians, Barry Eisenberg presents a seven year financial overview of physicians' office practices in "Trends in Physicians' Incomes, Expenses and Fees: 1969-1976." The article updates a similar article which appeared in the 1975-76 edition of Profile.

The Malpractice Problem and Its Effects on Medical Practice *by Sharon R. Henderson**

The results of a nationwide survey of physicians indicate that the malpractice insurance crisis of 1975 has had significant and far-reaching effects on the practice of medicine in the United States. The 5,300 practicing physicians who responded to the AMA's eleventh annual Periodic Survey of Physicians (PSP11) in 1976-1977 were asked to relate specific changes in their medical practice to recent increases in their professional liability premiums.[1] The results of the survey, summarized in this paper, indicate that as many as half of the non-federal, office-based physicians in active medical practice have made certain changes in their practices as a direct influence of the malpractice insurance situation. Inasmuch as many of the changes may well be related to both losses in practice efficiency as well as direct increases in patient costs, the implications regarding cost of health care may be substantial.

THE CURRENT MALPRACTICE INSURANCE SITUATION

For most physicians, the malpractice insurance crisis of the past several years appears to have subsided. Recent reports indicate that malpractice insurance premiums have now approached stability in all but a few states, that at least basic coverage--if not umbrella coverage--is readily available to all licensed physicians, and that premiums have actually been lowered in a few states.

Professional Liability Coverage

According to recent PSP results, 93.9 percent of the physicians who were in office-based medical practice in the United States in 1976 were covered by some form of professional liability insurance. Chi-square test results indicate that the likelihood of being covered by professional liability insurance is significantly related[2] to both specialty and location of practice (Tables I and II). General and family practitioners (90.2% covered) as well as obstetrician-gynecologists (91.0%) were somewhat less likely than other specialists to be covered by liability insurance. Radiologists, on the other hand, were almost certain (99.6%) to practice with liability coverage. Physicians practicing in the Pacific census division (86.9% covered), the Mountain division (92.4%), and the West South Central division (92.5%) were slightly less apt to have insurance coverage than physicians practicing elsewhere.

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[1] For a detailed discussion of survey methodology, see Henderson, in this volume.

[2] All tests were significant at the .001 level.

Professional Liability Premiums

In late 1976, the mean per annum premium for professional liability insurance coverage for physicians in all specialties was $4,714. There was, however, significant variation in per annum premiums by both specialty and location (Tables I and II). Mean per annum premiums ranged from a low of $1,140 for psychiatrists to an amount approximately ten times larger for anesthesiologists ($10,596). Specialists in other high-risk categories, including surgery ($7,774) and obstetrics-gynecology ($8,198), also paid premiums that were considerably above average.[1] The mean premium paid by physicians practicing in the Pacific division ($7,722) was higher by an amount in excess of $2,000 than mean premiums for physicians practicing in any other census divisions in the United States.

Claims Filed

Survey results indicate that one out of every three office-based physicians has, at some time, had a malpractice claim filed against him/her. Again, there is significant variation by both specialty and location of practice with respect to the filing of claims (Table III and IV). Physicians most likely to have had a claim filed included obstetrician-gynecologists (53.4%) and surgeons (46.5%). Compared by location of practice, physicians in the Pacific division were considerably more likely than physicians practicing elsewhere to have had a claim filed against them (45.4%).

EFFECTS ON MEDICAL PRACTICE

Large proportions of physicians who responded to the survey indicated that the medical malpractice insurance crisis has had a direct influence on their medical practice. Although the most frequently reported effects were cost-related, many other responding physicians reported that the malpractice situation had caused them to discontinue performing certain procedures and to be much more selective in choosing their patients. Much smaller proportions reported that because of increased premiums, they have terminated their insurance, moved to a new location, changed their specialty, changed their employment, or even given up the practice of medicine entirely. Detailed survey findings summarizing these results are presented in Table V, VI, and VII, and discussed in the following sections.

---

[1] The term "high-risk" refers to the relatively high likelihood of certain specialists to be sued for malpractice. The examination of all claims closed throughout the U. S. in 1970 showed that orthopedic surgeons, anesthesiologists, general surgeons, obstetrician-gynecologists, and general practitioners were subject to claims more frequently than were other types of specialists [Report of the Secretary's Commission on Medical Malpractice, 1973].

Fee Increases

By far, the most significant effect of the malpractice insurance situation has been for physicians to pass along some of the increased costs of their liability premiums to their patients. Survey results indicate that 48.9 percent or about one out of every two office-based physicians in active practice in the United States in 1976-77 increased patient fees as a direct result of increased professional liability premiums (Table VI). Among those who increased their fees, the average fee increase reported was 11.4 percent.

As shown in Tables VI and VII, the proportion of physicians who increased their fees as well as the average fee increase varied significantly by both specialty and location of practice. Not surprisingly, those physicians who were most likely to increase their fees and to increase them by the largest amount were the same groups of physicians who experienced the largest increases in their liability premiums. Almost two out of every three anesthesiologists, obstetrician-gynecologists, and surgeons reported that higher liability premiums had caused them to increase their fees an average of 12 to 13 percent. Compared by location of practice, physicians in the Pacific division were both more likely to increase their fees (60.3%) and to increase them at a greater rate (13.2%) than were physicians in other areas of the country.

Defensive Medicine

About one in three (35.6%) physicians who responded to the survey indicated that their reaction to the malpractice situation has been to respond defensively by ordering more tests and procedures for their patients than they might have considered previously. Statistically significant differences were again observed by both specialty and location of practice. Physicians most likely to protect themselves against possible legal action in this manner included general and family practitioners (46.1%) as well as physicians practicing in the specialties of obstetrics-gynecology (45.9%) and surgery (41.7%). Physicians practicing in the West and East South Central divisions (44.0% and 39.0%, respectively) were also more likely than physicians in other divisions to perform additional tests in response to the malpractice situation.

An alternative method for practicing medicine defensively is the selective rejection of certain types of cases with presumably higher risks. Of the physicians who responded, 31 percent or slightly less than one-third indicated that the malpractice situation has influenced them to be more cautious in accepting certain types of patients in their practices. The variation observed was statistically significant by specialty and location of practice. Physicians who exercised greatest selectivity in accepting patients were general and family practitioners (44.9%). Surgeons (34.7%) and obstetrician-gynecologists (36.5%) were also found to be more apt than other specialists to avoid certain types of high-risk cases. Similarly, physicians practicing in the Pacific division (37.4%) and in the West South Central division (36.9%) were somewhat more likely to respond to the malpractice situation in this manner than were physicians in other areas.

A small proportion of the responding physicians volunteered that their reaction to the malpractice situation has been to discontinue certain procedures, to rely on consultants more often, to use consent forms, and, in general, to be more conservative and cautions in their practice of medicine. Fewer than one percent of the respondents indicated that there had been any positive malpractice-induced changes in their practices. These included better record keeping, increased efficiency, and an expansion of the actual amount of time spent with their patients. Alternatively, several physicians responded that the malpractice situation had caused them to be less humane with their patients, more angry, or to derive less satisfaction from the practice of medicine. Still others answered that, at the time of the survey, they were still considering making some practice changes but had not yet done so.

Termination of Insurance

Another approach that some physicians have taken to cope with increased insurance premiums has been to terminate their liability insurance coverage. Of the responding physicians, 5.9 percent reported that they had chosen to practice without coverage rather than to pay the increased costs. Anesthesiologists (10.9%), obstetrician-gynecologists (9.2%), and general/family practitioners (8.5%) were all more likely than other specialists to terminate their liability insurance as a direct reaction to increasing premiums. In addition, physicians residing in the Pacific census division (12.0%) were almost twice as likely as physicians residing elsewhere to terminate their policies.

Location/Employment Changes

Inasmuch as relocating a medical practice represents an impractical consideration for most established office-based physicians, it is not surprising that fewer than 3 percent of the responding physicians chose this option despite increasing premiums. Physicians who were more apt than others to relocate because of increased premiums included anesthesiologists (6.0%) as well as physicians residing in the Mountain (4.0%) or Pacific (3.4%) census divisions.

Changing from one primary specialty to another may also present complexities for most practicing physicians. In spite of the difficulty, 2.9 percent of those who responded to the survey indicated that the malpractice situation had influenced them to change from one primary specialty to another. Physicians practicing obstetrics-gynecology (6.1%) or general/family medicine (4.6%) were somewhat more likely than other specialists to change their primary specialty as a direct result of increasing malpractice insurance premiums. Physicians in these same two specialty groups (4.0% and 3.3%, respectively) were also somewhat more inclined than other physicians (2.6%) to accept employment in a government or university setting as a solution to the increasing costs of malpractice insurance.

Of the physicians who responded to the survey, 1.7 percent claimed that the malpractice insurance situation had influenced their decision to permanently terminate the practice of medicine. Physicians who responded in this manner were found to be significantly older than other respondents (mean age of 60.8 yrs. compared with 50.3 yrs.). In addition, the decision to quit medicine was found to be significantly more prevalent among solo practitioners (2.4%) and among physicians in general/family practice (2.6%) than among other physician groups.

CONCLUSIONS

The effects of the malpractice insurance crisis of 1975 are still being felt by U. S. physicians and their patients. According to recent survey findings, the most significant effects have been cost-related. Approximately half (48.9%) of the nonfederal, office-based physicians in active medical practice in the United States in 1976 reported that they had increased their fees as a direct result of increased professional liability premiums. The average fee increase reported was 11.4 percent.

Another direct effect of the malpractice insurance situation that has significant cost implications is the practice of defensive medicine. Slightly more than one-third (35.6%) of the responding physicians indicated that their reaction to the malpractice situation has been to become more defensive in their practice of medicine. Such physicians claimed that they now order more tests and procedures, that they rely on consultants more often, and that, in general, they have become more cautious and conservative in their practice of medicine. It is likely that such changes have had a positive effect on the increasing costs of health in the U. S. over the last few years. Whether such changes have also increased the quality of care is a topic that requires further study.

Table III—Proportion of Physicians with Claims Filed by Specialty, 1976

Specialty	No. of Respondents	Proportion With Claims Filed[a]
General/Family Practice	1,094	32.4%
Internal Medicine	876	23.5
Surgery	1,230	46.5
Pediatrics	322	20.2
Obstetrics-Gynecology	365	53.4
Radiology	233	36.5
Psychiatry	395	11.4
Anesthesiology	212	34.9
Other Specialties	390	22.8
Total Physicians[b]	5,330	33.0
		$X^2 = 333.6$***

---

[a] Question was worded: "Have you ever had a malpractice claim filed against you?"

[b] Total includes physicians for whom information regarding specialty was not available.

***Significant at $\alpha = .001$.

Table IV—Proportion of Physicians with Claims Filed by Census Division, 1976

Census Division	No. of Respondents	Proportion With Claims Filed[a]
New England	317	24.3%
Middle Atlantic	990	36.7
East North Central	888	33.1
West North Central	364	27.2
South Atlantic	763	24.1
East South Central	224	31.3
West South Central	422	28.2
Mountain	269	30.9
Pacific	914	45.4
Total Physicians[b]	5,330	33.0
		$X^2 = 120.3$***

[a] Question was worded: "Have you ever had a malpractice claim filed against you?"

[b] Total includes physicians for whom information regarding census division was not available.

***Significant at $\alpha = .001$.

Table I—Professional Liability Insurance by Specialty, 1976

		Professional Liability Insurance		
			Per Annum Premium	
Specialty	No. of Respondents	Percent Covered	Mean	Standard Error
General/Family Practice	1,127	90.2%	$3,222	$212
Internal Medicine	894	96.6	2,537	200
Surgery	1,265	94.0	7,774	228
Pediatrics	332	95.6	2,323	284
Obstetrics-Gynecology	375	91.0	8,198	311
Radiology	240	99.6	3,535	246
Psychiatry	405	93.8	1,140	111
Anesthesiology	217	95.2	10,596	616
Other Specialties	401	94.5	2,952	268
Total Physicians[a]	5,330	93.9	4,714	92
		$\chi^2 = 57.7$***	F = 99.6***	

[a] Total includes physicians for whom information regarding specialty was not available.

***Significant at $\alpha = .001$

Table II—Professional Liability Insurance by Census Division, 1976

Census Division	No. of Respondents	Professional Liability Insurance		
		Percent Covered	Per Annum Premium	
			Mean	Standard Error
New England	324	96.2%	$2,818	$373
Middle Atlantic	1,020	96.4	4,957	236
East North Central	910	96.7	4,733	238
West North Central	377	96.1	3,181	205
South Atlantic	784	94.1	3,357	166
East South Central	231	97.8	2,784	211
West South Central	425	92.5	3,577	331
Mountain	275	92.4	5,434	615
Pacific	948	86.9	7,722	290
Total Physicians	5,330	93.9	4,714	92
		$\chi^2 = 117.3$***	F = 28.4***	

[a] Total includes physicians for whom information regarding census division was not available.

***Significant at $\alpha = .001$.

Table V—Effects of Increased Professional Liability Premiums on Medical Practice, 1976

Effect on Medical Practice	Affirmative Responses[a] N	Affirmative Responses[a] Percent of Total Responses
Increase your fees	2,605	48.9%
Prescribe additional laboratory tests or x-rays	1,899	35.6
Not accept certain types of cases	1,653	31.0
Terminate professional liability insurance	316	5.9
Change geographic location	157	2.9
Change primary specialty	157	2.9
Accept full-time federal, state, or university employment	139	2.6
Permanently terminate practice	91	1.7

[a] Question was worded: "Have recent increases in your professional liability premiums influenced you to do any of the following?" Multiple responses to the question were permitted.

References

Cooper, J. K. and Stephens, S. K.: "The Malpractice Crisis -- What Was It All About" Inquiry XIV: 240-253, September, 1977.

Golin, C. B.: "How Are My Colleagues Coping" American Medical News, April 28, 1978

"Malpractice '77: 50-State Picture Improves" Medical World News, January 10, 1977.

Medical Malpractice, Report of the Secretary's Commission on Medical Malpractice. DHEW Publication No. 05-73-88. Department of Health, Education, and Welfare, Washington, D. C., January 16, 1973.

Physicians' Work Patterns Under Alternative Methods of Reimbursement *by Joel D. Bobula* *

INTRODUCTION

A number of analysts have contended that the manner in which a physician is paid for his or her services has an effect on work effort (Pauly, 1970; Newhouse, 1973; Sloan, 1974). This paper presents data on the number of hours worked and the number of patient visits per hour for a sample of approximately 3,000 physicians reimbursed in different forms.

There are three broad categories of ways in which a physician might be reimbursed in the United States: 1) fee-for-service, whereby a physician is reimbursed by his or her own patients on a piece-work basis, 2) salaried practice, and 3) income-sharing, in which income for physicians working in a group practice setting is distributed according to some prearranged plan. It is also possible for some physicians to be paid for their services by some combination of the above methods.[1]

Note that what is under investigation in this paper is the manner in which a physician is paid for his or her services, and not the form in which patients pay for the services of a physician. For example, patients who secure physicians' services through a group practice may pay a lump-sum annual fee or may pay on a fee-for-service basis at the time services are provided. However, physicians employed in the group practice setting may be reimbursed under a salary fixed for some time period, by a share of the total net income of the practice, or from the revenue generated from his or her own patients.

REIMBURSEMENT METHODS

It is often argued that physicians reimbursed on a fee-for-service basis may have a greater incentive to work longer hours and handle a larger patient load than physicians who are not reimbursed on a fee-for-service basis. This hypothesized effect follows from the assumption that income for the physician reimbursed on a fee-for-service basis varies directly with the number of services performed. Since the physician is paid for each procedure under a fee schedule, income is simply net revenue (after taxes) generated by the physician. Under alternative reimbursement schemes such as income-sharing or salaried practice, the incentive to work longer hours and see more patients may be reduced since income need not be determined solely by the dollar amount of revenue generated by the physician. Other factors, such as percentage ownership of a group practice, specialty, or length of service, may be more important determinants of income than work effort.

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[1] The list is not exhaustive. For example, some hospital-based physicians such as radiologists and pathologists may receive a percentage of the net or gross income of their department. However, the three broad categories outlined in the text cover the vast majority of office-based physicians in practice in the United States.

Solo practitioners are almost always reimbursed on a fee-for-service basis, whereas income-sharing or salaried practice is more common for group practice physicians. Also, the greater the size of the group practice, the greater the likelihood that a physician will not be reimbursed on a fee-for-service basis. This point is illustrated in Table 1 which, for a sample of approximately 1,000 group practice physicians, presents data on the percentage of group practice physicians in each reimbursement category by size of practice. For this sample of physicians, 13 percent received their income entirely from revenue from their own patients, 30 percent were on salary, and 57 percent shared practice income. As group size increased, the proportion of physicians who derived their income from own-patient revenue declined, while the proportion of physicians reimbursed in an alternative fashion increased.

Alternative reimbursement methods may be classified into either of three general categories: 1) income-sharing, 2) salaried practice, or 3) some combination of the two. The effect of income-sharing arrangements on work effort depends on the manner in which income is distributed. A 1975 survey of group medical practices in the United States conducted by the American Medical Association's Center for Health Services Research and Development, found that of those groups with income sharing arrangements, approximately one-half chose to distribute income equally. (Goodman, Bennett, and Odem, 1976). This method was most preferred by single specialty groups. The remainder chose to distribute income according to a formula which included the amount of revenue generated per physician among other factors (e.g., specialty, length of service). Multispecialty groups were more likely to distribute income according to a formula.

If income from a group practice is shared equally, it is often alleged that work effort decreases as the size of the group increases (Newhouse, 1973). The reward for additional effort presumably is less, the greater the number of physicians sharing in that reward. However, if shares are determined by a formula which takes into account such factors as revenue generated, hours worked, or patients seen, then the effect of group size on work effort may be mitigated to some extent.

Table I—Percentage Distribution of a Sample of Group Practice Physicians by Method of Income Distribution and Size of Group, 1973

	Method of Reimbursement			
Size of Group	Revenue from Own Patients	Share of Practice Income	Salary	Total
3	16	62	22	100
4	18	60	22	100
5-7	13	54	33	100
8-25	8	56	36	100
26 and Over	7	50	43	100
All Sizes	13	57	30	100

Source: Eighth Periodic Survey of Physicians. August, 1973. Center for Health Services Research and Development. American Medical Association.

Alternatively, physicians may be paid on a salaried basis. In this case, it is argued that the salaried physician has little motivation to increase his efforts beyond a certain acceptable level since the economic incentive facing the physician reimbursed on a fee-for-service basis is absent for the salaried physician. Again, the possibility exists that if salaries next year are dependent on physician effort this year, for example, then the effect of salaried practice on physician effort should be mitigated as well.

In sum, one would expect to find that physicians reimbursed on a fee-for-service basis work longer hours and handle a larger patient load than their income-sharing and salaried counterparts. For group physicians who share income on an equal basis, one would expect work effort to be inversely related to the size of the group. It is possible, however, that incentives have been established in those cases where physicians are reimbursed on a nonfee-for-service basis in order to reduce the effects of different reimbursement methods on physicians' work patterns.

VARIATIONS IN WORK PATTERNS

The AMA's 1973 Periodic Survey of Physicians provides data on approximately 3,000 physicians who derived 100 percent of their income from one of three methods of reimbursement: 1) revenue generated from one's own patients in either a solo or "expense sharing only" practice arrangement, 2) share of practice income, or 3) salary or retainer. The survey questionnaire does not permit a further classification of income-sharing physicians according to whether income was shared equally or by formula.[1] A significant proportion of the physicians in the income-sharing category may be reimbursed under a formula which takes into account such factors as revenue generated, hours worked, or patients seen. As a result, the work patterns of income-sharing physicians may not differ substantially from the work patterns of physicians reimbursed on a fee-for-service basis.

The physicians sampled were asked to report the total number of hours worked and the number of patients seen in various settings in their most recent complete week of practice. For the entire sample, the average number of total hours worked per week was 51.2.

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[1] Respondents were asked to report what percent of their net income from medical practice in 1972 was derived from each of the following sources:

a. Revenue from your own patients in a solo or "expense sharing only" practice arrangement.

b. Salary or retainer

c. Share of practice income.

Physicians reimbursed on a fee-for-service basis worked an average of 49.8 hours, salaried physicians worked an average of 51.0 hours and income-sharing physicians averaged 53.6 hours. The results are contrary to the expectations outlined above; however, a more detailed analysis presents a different picture.

One of the factors confounding the relationship between method of reimbursement and physicians' work patterns is mode of practice. Solo and group practice physicians differ markedly in the number of hours worked. Solo practitioners in this sample worked an average of 49.5 hours per week whereas total hours for group physicians ranged from 54.6 hours for two-man partnerships to 52.0 hours for physicians in groups of 25 or more. Similarly, the number of patients seen varies according to whether a physician works in a solo or group practice setting.

Data are presented in Tables II and III on the total number of hours worked and patient visits per hour[1] for solo and non-solo physicians.[2] Non-solo physicians are classified further by method of reimbursement. With the data disaggregated in this manner, an interesting pattern emerges. For the specialties examined, it is evident that, in general, non-solo physicians work longer hours and see more patients per hour than their solo counterparts. The effects of different reimbursement methods on non-solo physicians are also apparent.

For general/family practice physicians, and for the medical specialties of internal medicine and pediatrics, non-solo physicians reimbursed on a fee-for-service basis and physicians who share practice income in some fashion work longer hours and see more patients than their salaried counterparts. For the surgical specialties of general surgery and obstetrics-gynecology, there is no evidence of any systematic effect of different methods of reimbursement on physician effort. In addition, there is no evidence of any significant differences between non-solo, income-sharing physicians and physicians reimbursed on a fee-for-service. One could speculate that effective incentive structures have been established for income-sharing, group physicians. A more detailed analysis of how income is distributed among income-sharing physicians would prove useful in this regard.

The reasons for the discrepancy between the surgical and non-surgical specialties are not obvious. A partial explanation may be

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[1] Patient visits per hour was calculated by combining the number of visits per week for different visit categories (e.g., office, hospital) into a total visits measure for each physician and dividing this number by the total hours practiced during the week.

[2] The size of the sample did not permit a more refined breakdown by size of group.

Table VI—Effect of Increased Professional Liability Premiums on Physicians' Fees by Specialty, 1976

Specialty	No. of Respondents	Proportion Increasing Fees	Fee Increase Mean	Fee Increase Standard Error
General/Family Practice	1,127	47.8%	11.6%	0.2%
Internal Medicine	894	44.3	10.4	0.4
Surgery	1,265	61.7	11.8	0.5
Pediatrics	332	44.3	9.9	0.4
Obstetrics-Gynecology	375	66.4	13.2	1.0
Radiology	240	37.5	8.9	0.8
Psychiatry	405	23.7	9.4	0.9
Anesthesiology	217	66.4	12.5	0.7
Other Specialties	401	33.2	11.6	1.0
Total Physicians[a]	5,330	48.9	11.4	0.2
		X^2 = 322.4***	F = 3.2***	

[a] Total includes physicians for whom information regarding specialty was not available.

***Significant at $\alpha = .001$.

Table VII—Effect of Increased Professional Liability Premiums on Physicians' Fees by Census Division, 1976

Census Division	No. of Respondents	Proportion Increasing Fees	Fee Increase	
			Mean	Standard Error
New England	324	40.4%	10.5%	0.7%
Middle Atlantic	1,020	50.3	12.2	0.5
East North Central	910	50.2	10.7	0.4
West North Central	377	38.2	10.2	0.7
South Atlantic	784	39.4	11.1	0.6
East South Central	231	46.3	10.7	0.8
West South Central	425	54.4	9.7	0.4
Mountain	275	48.0	9.6	0.6
Pacific	948	60.3	13.2	0.5
Total Physicians[a]	5,330	48.9	11.4	0.2
		χ^2 = 125.8***	F = 4.2***	

[a] Total includes physicians for whom information regarding census division was not available.

***Significant at $\alpha = .001$.

Table II—Average Number of Hours Practices Per Week by Specialty, Type of Practice, and Method of Reimbursement, 1973

	GP-FP	INT	PED	SURG	OB-GYN
Solo (Revenue from own patients)	50.5 (0.8)	50.9 (1.0)	47.0 (1.6)	50.4 (0.7)	50.4 (1.9)
Non Solo (Partnerships or groups)	53.4 (0.9)	55.0 (0.3)	51.3 (1.2)	54.8 (0.7)	54.5 (1.2)
Revenue from Own Patients	56.9 (1.8)	57.2 (1.7)	52.1[a] (1.9)	53.5 (1.8)	53.9[a] (3.0)
Share of Practice Income	53.4 (1.1)	56.1 (1.3)	52.2 (1.7)	55.2 (0.9)	54.2 (1.6)
Salary	49.0 (2.3)	51.4 (1.7)	48.3[a] (1.9)	54.6 (1.4)	55.1 (2.4)

[a] Fewer than 30 observations.

NOTE: Standard error of the mean is in parentheses.

SOURCE: Eighth Periodic Survey of Physicians. August, 1973. Center For Health Services Research and Development. American Medical Association.

Table III—Average Number of Visits Per Hour by Specialty, Type of Practice, and Method of Reimbursement, 1973

	GP-FP	INT	PED	SURG	OB-GYN
Solo (Revenue from own patients)	4.49 (0.14)	3.37 (0.17)	4.68 (0.23)	2.82 (0.08)	3.57 (0.61)
Non Solo (Partnerships or groups)	5.17 (0.17)	3.31 (0.12)	5.01 (0.27)	3.05 (0.08)	3.89 (0.14)
Revenue from Own Patients	5.12 (0.28)	3.19 (0.26)	5.38[a] (0.59)	2.83 (0.23)	3.79[a] (0.28)
Share of Practice Income	5.42 (0.24)	3.45 (0.15)	5.17 (0.40)	3.16 (0.10)	3.97 (0.20)
Salary	4.29 (0.37)	3.14 (0.26)	4.20[a] (0.36)	2.88 (0.16)	3.78 (0.22)

[a] Fewer than 30 observations.

NOTE: Standard error of the mean is in parentheses.

SOURCE: Eighth Periodic Survey of Physicians. August, 1973. Center for Health Services Research and Development. American Medical Association.

found in the data presented in Table IV. Average net incomes by type of practice and method of reimbursement exhibit the same pattern found for hours of work and patient visits per hour. Again, non-solo physicians typically earn more than solo physicians. Also, physicians in the non-surgical specialties who share income or are reimbursed on a fee-for-service basis earn more than nonsurgical, salaried physicians.

The income figures in Table IV may indicate that salaried physicians in the specialties of general/family practice, internal medicine, and pediatrics work fewer hours and see fewer patients per unit of time as a result of the lower earnings derived from salaried practice. However, it is equally plausible that a number of physicians may choose salaried practice in order to work shorter and more regular hours in spite of the reduced earnings. In addition, it is not obvious why salaried physicians in the surgical specialties should earn more than salaried physicians in the nonsurgical specialties. Thus, while income differentials may provide a partial explanation of the discrepancy in the work patterns of surgical and of nonsurgical salaried physicians, more information is needed on both the factors leading to physician choices of various practice and reimbursement modes, and on the determinants of inter-specialty variations in earnings within a given reimbursement category.

Finally, the observation that group practice physicians handle a larger number of patients and work longer hours merits further examination. A number of studies have demonstrated that the organizational framework of medical practice affects the patient flow handled by physicians. Reinhardt (1972) found that, for given levels of capital and labor, physicians in (single specialty) groups have roughly five percent more patient visits than do physicians in solo practices. Kimball and Lorant (1977) obtained similar results for small group practices (fewer than six physicians), but not for large groups. Hence, it could be argued that the organizational framework of group medical practice increases physician productivity. However, some analysts would argue that group practitioners provide a different mix or quality of services than solo practitioners (Bailey, 1970).

The finding that group practice physicians work longer hours than solo physicians is unexpected. Whether this finding is attributable to the organization of medical practice, or some other underlying factor such as the age, sex or geographic location of group practice physicians requires further examination.

SUMMARY

This paper examined variations in physicians' work patterns across different reimbursement categories. Data were presented on average hours of work and patient visits per hour for a sample of physicians reimbursed on a fee-for-service basis, physicians in salaried

Table IV—Average Net Income by Specialty, Type of Practice, and Method of Reimbursement, 1973

	GP-FP	INT	PED	SURG	OB-GYN
Solo (Revenue from own Patients	39,200 (1,100)	45,200 (1,810)	39,000 (4,920)	58,100 (1,760)	52,800 (3,760)
Non-Solo (Partnerships or groups)	45,700 (1,530)	49,000 (1,750)	43,900 (2,730)	58,700 (1,880)	57,900 (2,680)
Revenue from Own Patients	48,200 (2,970)	53,500 (5,200)	40,200[a] (4,340)	50,600 (5,060)	52,900[a] (5,930)
Share of Practice Income	48,400 (2,020)	51,400 (2,150)	47,700 (4,290)	62,500 (2,560)	59,800 (3,880)
Salary	33,400 (3,010)	41,400 (2,840)	37,000[a] (3,440)	54,600 (3,160)	56,100 (4,300)

[a] Fewer than 30 observations.

NOTE: Standard error of the mean is in parentheses.

SOURCE: Eighth Periodic Survey of Physicians, August, 1973. Center for Health Services Research and Development. American Medical Association.

practice, and physicians who share income from a group practice arrangement.

In order to examine the relationship between various reimbursement schemes and work patterns, it was necessary to control for the physician's practice setting as group practice physicians were found to work longer hours and handle a larger patient load than solo physicians. With type of practice held constant, it was found that for general/family practice physicians, and for the medical specialties of internal medicine and pediatrics, physicians reimbursed on a fee-for-service basis and physicians who share practice income work longer hours and see more patients than their salaried counterparts. There was no evidence of any systematic differences between non-solo, income-sharing physicians and physicians reimbursed on a fee-for-service basis.

References

Bailey, Richard M. "Economies of Scale in Medical Practice." In Empirical Studies in Health Economics, edited by Herbert E. Klarman, Baltimore: Johns Hopkins Press, 1970.

Goodman, Louis J., Edward H. Bennett, and Richard J. Odem. Group Medical Practice in the U.S., 1975. Chicago: American Medical Association, 1976.

Kimbell, Larry J., and John H. Lorant. "Physician Productivity and Returns to Scale." Health Services Research 12, No. 4 (Winter 1977): 367-379.

Newhouse, Joseph P. "The Economics of Group Practice." Journal of Human Resources 8, No. 1 (Winter 1973): 37-56.

Pauly, Mark V. "Efficiency, Incentives and Reimbursement for Health Care," Inquiry 7, No. 1 (March, 1970): 114-31.

Reinhardt, Uwe E. "A Product Function for Physician Services." Review of Economics and Statistics 54, No. 1 (February 1972): 55-66.

Sloan, Frank A. "Effects of Incentives on Physician Performance." In Health, Manpower and Productivity, edited by John Rafferty, Lexington, Massachusetts: D.C. Heath, 1974.

Patterns in Geographic Location of Physicians: 1968-1976 *by Peter O. Way**

INTRODUCTION

In the period 1968 to 1976 the number of physicians in the United States increased 29% from 317,032 to 409,446. This was partially the result of the increase in the output of U. S. medical schools, as well as the continued flow of foreign-trained physicians from abroad. Although the U. S. total population was increasing in this same period, the increase in the number of physicians was relatively faster, with the result that the number of physicians per 100,000 population was higher in 1976 than in 1968.

The increase in the number of physicians, however, was not uniform in all geographic areas, nor in all areas of medicine. Similarly, in some states which experienced rapid population growth the increase in the number of physicians may not have kept pace with the population growth, with the result that the physician-population ratio may have actually declined in this period.

A concern of analysts of the supply of health manpower is the extent to which health personnel (e.g. physicians) respond to differences in the demand for their services by locating in (or relocating to) relatively underserved areas of the U. S. This paper, then, will examine state physician-population ratios and the changes in those ratios to determine the joint impact of physician and population change on the distribution of physicians. The principal source of data for this investigation is the Distribution of Physicians series published by the AMA's Center for Health Services Research and Development (1970, 1977).

Physicians are a rather heterogeneous group, especially with regard to their impact on the medical care of the population. Attention has been given over the past several years to the number of physicians in primary care specialties, particularly with the decline in the number of physicians in general practice. Changes in the number of physicians in the primary care specialties (i.e., internal medicine, pediatrics, obstetrics-gynecology, and family or general practice) are likely to have a much clearer effect on the care received by the area's population than are changes in the number of physicians in nonpatient care (e.g., administration, teaching, research, etc.).

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For this reason, the total physician population has been classified into two major groups, namely patient care and nonpatient care physicians. The former group has been further divided into those practicing primary patient care (those in the primary care specialties listed above), and those in secondary and tertiary patient care, consisting of all other physicians involved in direct patient care. Inactive physicians have been excluded from all calculations presented in this paper. Similarly, the figures presented for states refer only to non-federal physicians.

PATTERNS OF CHANGE, 1968-1976

The number of non-federal physicians active in patient care increased 24% between 1968 and 1976. Primary care physicians increased 21% while nonprimary patient care physicians increased 26% in this period. The number of nonpatient care physicians decreased 7%. This decrease was due to a 43% decrease in the number of physicians active in research. The number of physicians engaged in medical teaching rose 40%, while the number involved in administration increased 15%. The number of federal physicians decreased slightly over 7% between 1968 and 1976.

Because the number of secondary and tertiary care physicians increased more rapidly than did the number of primary care physicians in this period, patient care physicians in 1976 tended to be slightly more specialized in the aggregate than were patient care physicians in 1968. Approximately 53% of these physicians were classified as nonprimary care specialists in 1976, an increase of about 1% from eight years earlier.

The distribution of physicians by state is not subject to rapid variation. A number of factors contribute to this fact. Physicians, for example, are influenced by incentives inherent in the current medical system which tend to decrease their propensity to relocate. The monetary, temporal, and emotional costs of closing a viable practice and establishing a new one in a different state are likely to be considerable, especially for a solo practice, fee-for-service physician. Thus, there are strong incentives for a physician to remain in his current state of residence.

Many of the changes, then, in the distribution of physicians occur in the process of additions to the current stock of physicians originating from medical schools, and losses through retirement and death. This is the reason that increasing attention has been placed in recent years on methods to attract young physicians to "shortage" areas.

In an absolute sense, the changes which took place in the distribution of physicians between 1968 and 1976 were relatively minor. Florida, which had the greatest relative gain in its share of the total number of patient care physicians, increased only from 2.9% to 3.9% of the national total. Despite a net gain of 7,254 patient care physicians, California increased its share of the total only .1%, from 12.3% to 12.4%.

PHYSICIAN-POPULATION RATIOS

A more appropriate measure of the availability of physicians' services than the absolute number of physicians is the physician-population ratio. This measure indicates the number of physicians per standard number of people in the total population, and is generally computed per 10,000 or per 100,000. The latter base will be used for comparisons in this paper. This ratio is not a precise measure of the true availability of physicians' services in a state. Other factors such as particular services required by a patient, or the services provided by the physicians in a state may affect the true availability of services. Likewise, the distribution of physicians within a given state may make the access of patients in rural areas or in the inner cities of large metropolitan areas less than the aggregate state physician-population ratio might suggest.

The physician-population ratio does, however, measure differences in the number of physicians standardized for population size and, therefore, as Shaffner and Butter (1972) suggest, may be a valid measure of relative differences in the availability of care.

Physician-population ratios for the several categories of physicians described above have been calculated for each state as of 1976. Results show considerable variation between states in the number of physicians per 100,000 population. These patterns will be examined for each of the physician groups.

Non-federal Primary Care

The non-federal primary care physician-population ratio for the United States in 1976 was 64.8 per one hundred thousand, up about 12% from the level in 1968. The physician-population ratios for states in 1976 ranged from 38.9 per 100,000 in South Dakota to 164.3 in the District of Columbia (Table I). Other states with relatively low ratios include Alaska, Mississippi, and Arkansas, while states with high primary care ratios include Connecticut, Maryland, Massachusetts, and New York.

Figure 1 provides a visual portrayal of the state patterns in the physician-population ratio for primary care. These ratios tend to be higher in parts of New England, in the Mid-Atlantic states, and in several of the Pacific states. The Midwest is approximately average, with several states higher and some states lower. States in the "Census South" are, on the whole, below the aggregate U. S. level, with

Table I—Non-Federal primary care physician-population ratios by state, 1968 and 1976 (number of physicians per 100,000 population)

	Physician-population ratio 1968	Physician-population ratio 1976
Alabama	38.7	45.7
Alaska	34.1	40.2
Arizona	52.5	66.3
Arkansas	42.0	43.5
California	72.8	78.1
Colorado	65.1	70.2
Connecticut	68.0	80.0
Delaware	58.0	61.7
District of Columbia	125.4	164.3
Florida	52.8	60.0
Georgia	44.2	50.0
Hawaii	57.6	68.0
Idaho	47.7	46.0
Illinois	57.0	67.0
Indiana	46.3	50.0
Iowa	47.4	49.7
Kansas	46.6	53.9
Kentucky	46.2	53.0
Louisiana	47.3	48.3
Maine	44.3	51.7
Maryland	64.3	80.9
Massachusetts	68.9	80.7
Michigan	49.4	57.2
Minnesota	60.5	72.4
Mississippi	38.0	42.3
Missouri	49.7	56.6
Montana	49.5	51.9
Nebraska	51.5	60.8
Nevada	43.8	45.3
New Hampshire	60.1	61.5
New Jersey	57.8	66.6
New Mexico	38.5	49.9
New York	82.9	90.7
North Carolina	46.2	55.1
North Dakota	45.6	46.5
Ohio	54.3	59.9
Oklahoma	44.5	46.9
Oregon	59.7	65.1
Pennsylvania	58.6	65.8
Rhode Island	58.8	78.5
South Carolina	40.5	48.7

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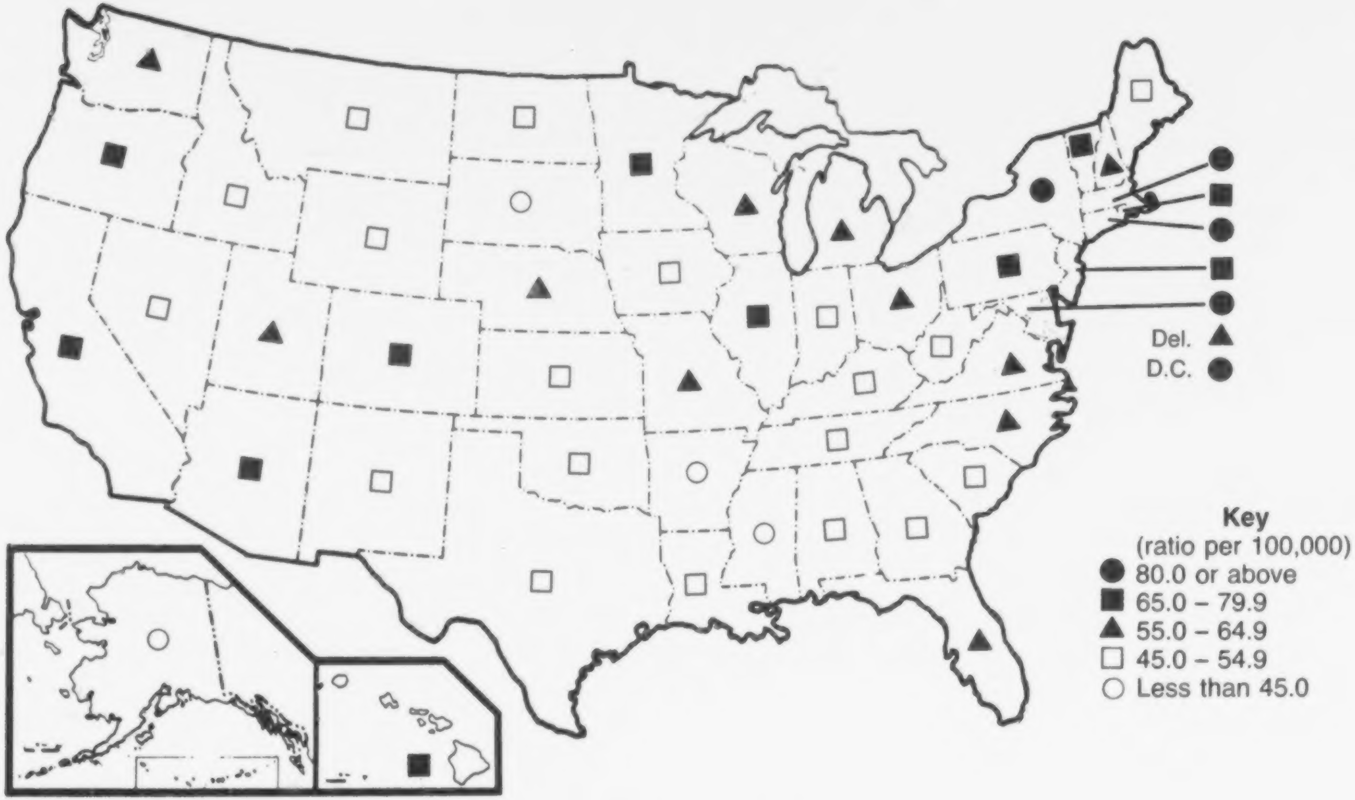
Table 1—*Continued*

	Physician-population ratio 1968	Physician-population ratio 1976
South Dakota	41.6	38.9
Tennessee	46.4	53.2
Texas	48.2	53.2
Utah	52.1	61.6
Vermont	68.8	78.3
Virginia	49.5	56.8
Washington	60.5	63.0
West Virginia	43.7	47.3
Wisconsin	49.9	55.3
Wyoming	48.9	48.5
U. S. Total	57.9	64.8

Figure 1—Physician-Population Ratio, 1976: Non-federal Primary Care Physicians


Del. ▲
D.C. ●
Key
(ratio per 100,000)
● 80.0 or above
■ 65.0 - 79.9
▲ 55.0 - 64.9
□ 45.0 - 54.9
○ Less than 45.0

the exception of Maryland and the District of Columbia, as noted above.

Non-federal Secondary and Tertiary Care

The non-federal secondary and tertiary care physician-population ratio for the United States in 1976 was 72.5 per 100,000, an increase of about 17% over this ratio in 1968. The physician population ratio for nonprimary patient care physicians ranges from a low of 37.0 in South Dakota to a high of 184.6 in the District of Columbia (Table II). Again we find that Alaska and Mississippi had relatively low ratios of nonprimary physicians to their populations while New York, Massachusetts, and Connecticut had much higher levels than average.

Figure 2 shows the geographic distribution of nonprimary care physician-population ratios. Again we find a noticeable concentration of physicians (in terms of the physician-population ratios) in the northeast section of the country, along with the far west, especially in California and Colorado. States in the South have a tendency to be average or below, with the exception again of the District of Columbia, Maryland, Delaware, and Florida. States in the East North Central division tend to have moderate ratios of nonprimary physicians to population, changing to relatively lower ratios in the West North Central division.

Total Non-federal Patient Care

In 1976, there were approximately 137.4 physicians providing direct patient care services per 100,000 population in the U. S. This figure represents a 14.8% increase over the same ratio in 1968. This increase would have been the full amount of change in the number of patient care physicians in this period (24%) except for the countervailing influence of population change in the physician-population ratio. The 8% increase in the total population within this period resulted in a relatively lower physician-population ratio than would otherwise have been the case.

Similar patterns to the ones already discussed for the two components of the total patient care physician-population can be found in Table III and in Figure 3. The patient care physician-population ratio is relatively high in the Mid-Atlantic division, most of New England, and high in California and Colorado. The pattern in the Midwest is mixed, while in the South these levels are low, with the exception of the District of Columbia, Maryland, and Florida.

Non-federal Nonpatient Care

The distribution of nonpatient care physicians is subject to a different set of considerations and values than is the distribution of

Table II—Non-Federal secondary and tertiary care physician-population ratios by state, 1968-1976 (number of physicians per 100,000 population)

	Physician-population ratio 1968	Physician-population ratio 1976
Alabama	33.4	43.8
Alaska	28.3	39.3
Arizona	53.8	73.4
Arkansas	31.8	41.5
California	78.1	93.7
Colorado	79.5	80.8
Connecticut	85.0	98.2
Delaware	57.2	67.9
District of Columbia	161.3	184.6
Florida	60.0	76.3
Georgia	43.9	57.0
Hawaii	60.0	72.0
Idaho	32.7	43.4
Illinois	58.4	68.7
Indiana	41.3	49.7
Iowa	40.8	46.2
Kansas	45.1	56.8
Kentucky	40.9	50.5
Louisiana	51.4	57.9
Maine	42.9	60.8
Maryland	72.7	87.1
Massachusetts	90.0	104.4
Michigan	57.7	63.2
Minnesota	61.8	70.3
Mississippi	29.1	39.3
Missouri	56.9	64.0
Montana	35.3	52.5
Nebraska	40.5	49.9
Nevada	44.0	63.0
New Hampshire	55.7	72.2
New Jersey	58.8	74.4
New Mexico	39.7	54.8
New York	103.0	106.1
North Carolina	41.5	54.9
North Dakota	34.6	45.0
Ohio	56.2	63.9
Oklahoma	42.8	51.5
Oregon	61.0	76.6
Pennsylvania	65.4	74.7
Rhode Island	70.4	83.0
South Carolina	31.1	44.0

(continued on following page)

Table 2—*Continued*

	Physician-population ratio 1968	Physician-population ratio 1976
South Dakota	26.8	37.0
Tennessee	51.7	63.4
Texas	47.8	59.4
Utah	60.0	72.2
Vermont	80.9	83.1
Virginia	46.4	62.6
Washington	62.6	75.6
West Virginia	43.1	56.2
Wisconsin	50.5	60.9
Wyoming	29.9	43.2
U. S. Total	61.8	72.5

Table III—Non-Federal total patient care physician-population ratios by state, 1968 and 1976 (number of physicians per 100,000 population)

	Physician-population ratio 1968	Physician-population ratio 1976
Alabama	72.1	89.5
Alaska	62.4	79.5
Arizona	106.3	139.7
Arkansas	73.8	87.5
California	150.9	171.7
Colorado	145.9	151.0
Connecticut	153.0	178.2
Delaware	115.1	129.5
District of Columbia	286.7	348.9
Florida	112.8	136.3
Georgia	88.1	107.0
Hawaii	117.6	140.0
Idaho	80.4	89.4
Illinois	115.4	135.7
Indiana	87.6	99.7
Iowa	88.2	95.9
Kansas	91.7	110.7
Kentucky	87.0	100.9
Louisiana	98.7	106.2
Maine	87.2	112.5
Maryland	137.0	168.0
Massachusetts	158.8	185.0
Michigan	107.1	120.4
Minnesota	122.3	142.7
Mississippi	67.2	81.6
Missouri	106.6	120.6
Montana	84.9	104.4
Nebraska	92.0	110.7
Nevada	87.7	108.3
New Hampshire	115.8	133.7
New Jersey	116.6	140.9
New Mexico	78.2	104.7
New York	185.9	196.8
North Carolina	87.7	110.0
North Dakota	80.2	91.5
Ohio	110.5	123.8
Oklahoma	87.3	98.4
Oregon	120.7	141.8
Pennsylvania	123.9	140.5
Rhode Island	129.3	161.4
South Carolina	71.5	92.6

(continued on following page)

Table 3—*Continued*

	Physician-population ratio 1968	Physician-population ratio 1976
South Dakota	68.4	75.8
Tennessee	98.1	116.6
Texas	96.0	112.6
Utah	112.0	133.8
Vermont	149.6	161.4
Virginia	95.9	119.3
Washington	123.1	138.6
West Virginia	86.8	103.4
Wisconsin	100.5	116.2
Wyoming	78.4	91.8
U. S. Total	119.7	137.4

physicians involved in patient care. It is not necessarily desirable, for example, for these physicians to be distributed relatively evenly across the country. There may, in fact, be advantages to the concentration of research facilities in a relatively few locations.

Table IV and Figure 4 show that, indeed, these physicians are concentrated in a few states, while the majority of the states have relatively few of these physicians. The states with high levels of nonpatient care physicians are largely located in New England and in the Mid-Atlantic division with some indication of high levels in some of the western states. The South, again, is low in respect to the ratio of nonpatient care physicians in the population, while the Midwest tends to be slightly below average.

Examining the absolute numbers of nonpatient care physicians in states, we find that there are only six states in which this population is above one thousand physicians. These states are: California, Illinois, Massachusetts, New York, Pennsylvania, and Texas. These states account for around 48% of the total number of nonpatient care physicians in the country.

INDEX OF RELATIVE CHANGE IN THE PHYSICIAN-POPULATION RATIO

Perhaps another likely avenue for examining the distribution of physicians is an index which would indicate the change which has occurred in the distribution over time. Such an index is computed here and is presented as an index of relative change in the physician-population ratio. Not only are physician-population ratios of interest but also the amount of change in these ratios in the time period under consideration. If we find that the more rapid changes in the physician-population ratio are occurring in those states which already had the highest ratios, then we might conclude that differences between states were becoming larger rather than smaller.

On the other hand, if positive changes in the physician-population ratios are found in those states with relatively low ratios, then changes in the physician and/or population distribution were serving to make the states more alike in terms of their presumed access to a physician, rather than more different.

The index used in this paper to compare the experience of the state in terms of changes in its physician-population ratios uses the change in the physician-population ratio for the entire United States as a standard. A state whose change in the physician-population ratio was above the U. S. level will have an index score of more than 100. Similarly, a state in which the physician-population ratio has changed only slightly will have a score of less than 100. This index, then, is computed as follows:

Table IV—Non-Federal non-patient care physician-population ratios by state, 1968 and 1976 (number of physicians per 100,000 population)

	Physician-population ratio 1968	Physician-population ratio 1976
Alabama	5.8	6.9
Alaska	3.7	5.6
Arizona	7.2	10.0
Arkansas	5.9	5.5
California	15.2	15.7
Colorado	19.3	14.0
Connecticut	20.9	21.0
Delaware	10.0	7.8
District of Columbia	55.5	53.9
Florida	9.8	8.6
Georgia	9.6	7.7
Hawaii	11.1	13.3
Idaho	4.3	3.6
Illinois	12.6	11.6
Indiana	7.1	6.7
Iowa	7.8	6.9
Kansas	9.6	8.2
Kentucky	8.6	7.9
Louisiana	10.7	8.9
Maine	7.4	7.7
Maryland	29.0	23.0
Massachusetts	34.2	23.6
Michigan	11.0	8.5
Minnesota	19.9	12.7
Mississippi	3.7	3.7
Missouri	13.7	12.3
Montana	3.6	3.0
Nebraska	8.9	10.4
Nevada	5.7	5.6
New Hampshire	10.3	10.4
New Jersey	11.4	11.4
New Mexico	8.4	9.2
New York	27.6	21.9
North Carolina	11.4	11.1
North Dakota	3.6	5.3
Ohio	11.5	8.2
Oklahoma	7.4	6.2
Oregon	11.8	10.7
Pennsylvania	15.7	13.1
Rhode Island	12.2	9.8
South Carolina	4.6	6.5

(continued on following page)

Figure 2—Physician-Population Ratio, 1976: Non-federal Secondary and Tertiary Care Physicians

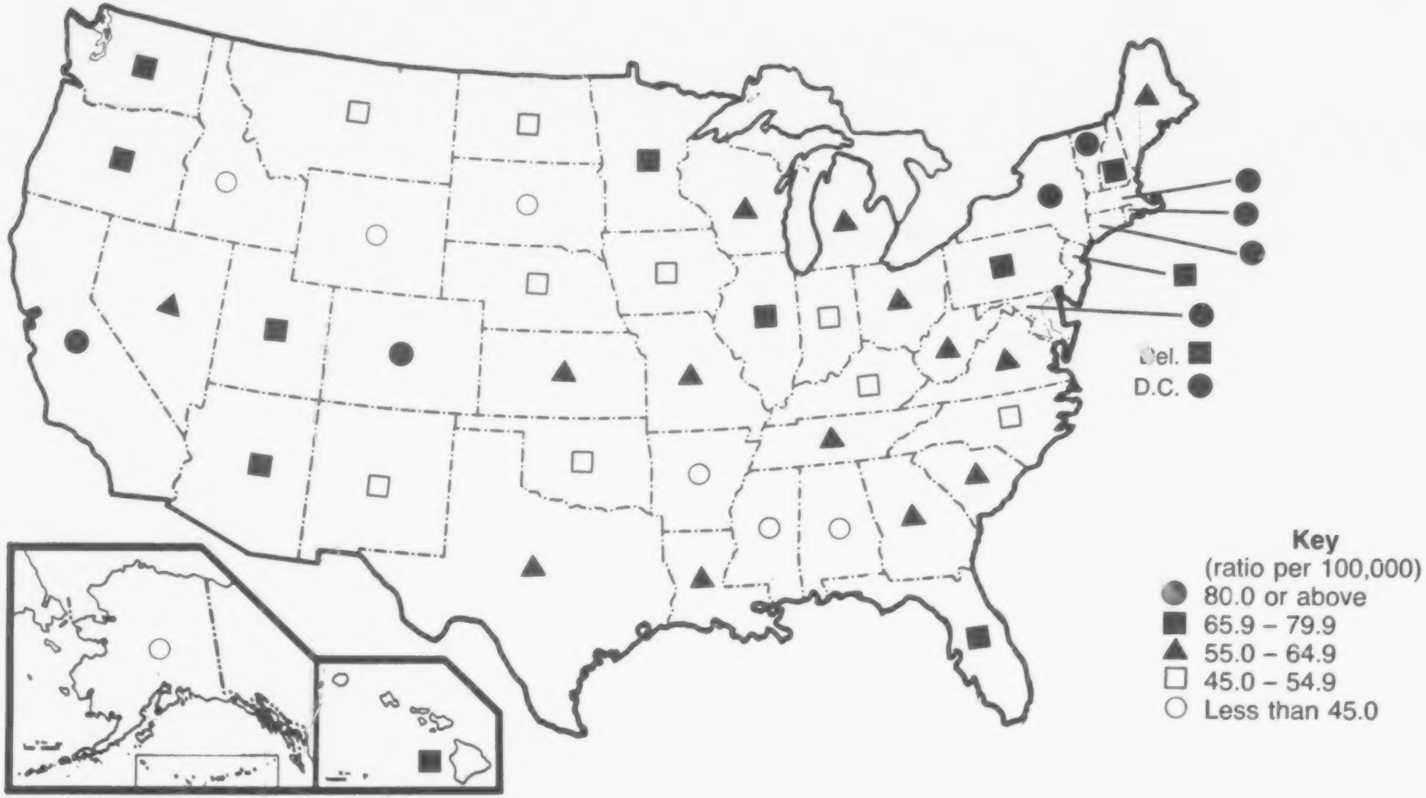

Del. ■
D.C. ●
Key
(ratio per 100,000)
● 80.0 or above
■ 65.9 - 79.9
▲ 55.0 - 64.9
□ 45.0 - 54.9
○ Less than 45.0

Figure 3—Physician-Population Ratio, 1976: Non-federal Total Patient Care Physicians

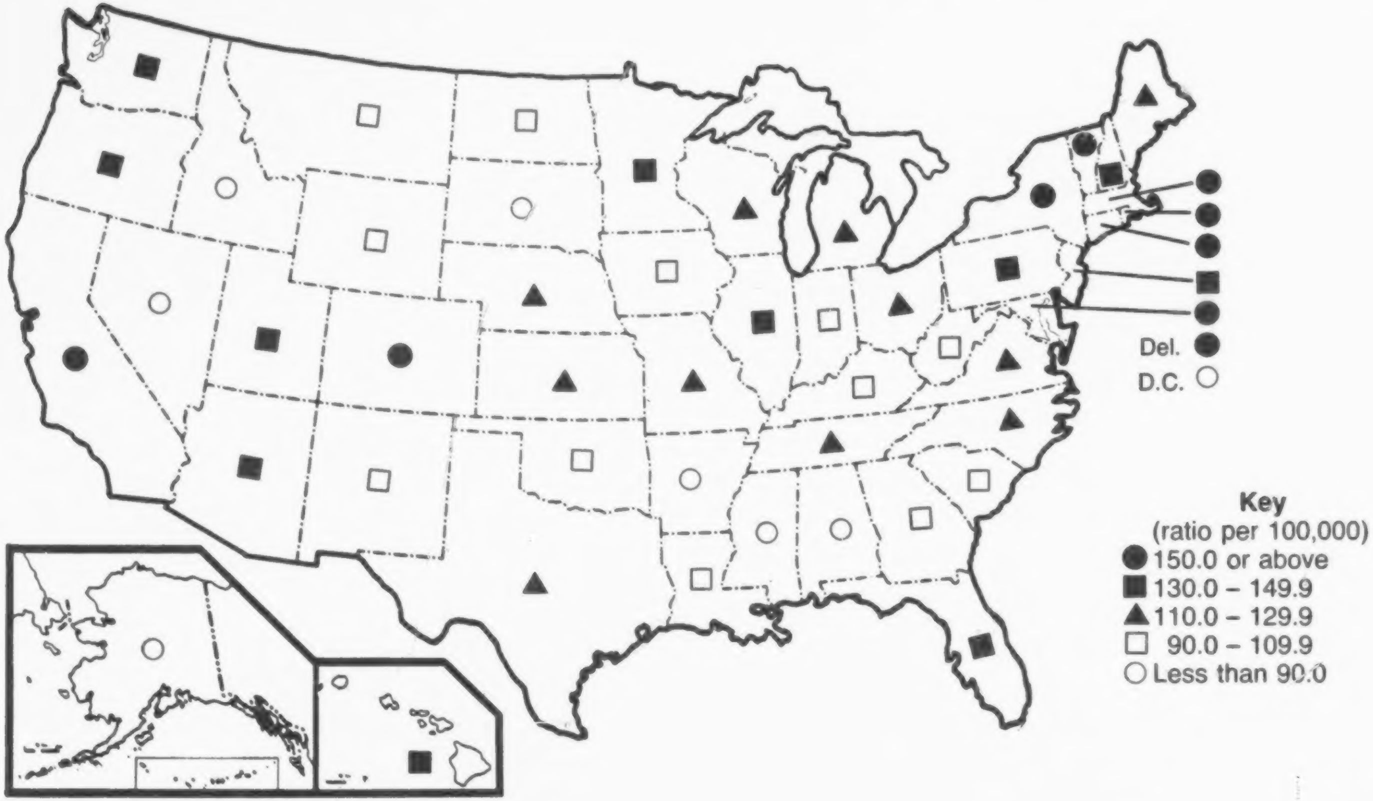

Del.
D.C.
Key
(ratio per 100,000)
● 150.0 or above
■ 130.0 - 149.9
▲ 110.0 - 129.9
□ 90.0 - 109.9
○ Less than 90.0

Table 4—*Continued*

	Physician-population ratio 1968	Physician-population ratio 1976
South Dakota	2.3	2.6
Tennessee	10.8	9.9
Texas	8.4	8.9
Utah	13.1	11.1
Vermont	23.5	22.2
Virginia	10.2	10.1
Washington	14.9	13.0
West Virginia	6.9	6.0
Wisconsin	9.5	8.3
Wyoming	3.1	4.2
U. S. Total	14.1	13.1

$$\text{Index of Relative Change} = \frac{\dfrac{\text{MD76/Pop76}_{\text{state}}}{\text{MD68/Pop68}_{\text{state}}}}{\dfrac{\text{MD76/Pop76}_{\text{US}}}{\text{MD68/Pop68}_{\text{US}}}} \times 100 \qquad (1)$$

Non-federal Primary Care

There was some tendency for the greatest relative (positive) changes in the physician-population ratios to occur in those states which already had high physician-population ratios. More to the point, there was a tendency for those states which had low physician-population ratios to have relatively low rates of change in those ratios between 1968 and 1976. States which had high physician-population ratios for primary care physicians exhibited a tendency to have the greatest amounts of absolute change as well as the greatest relative change.

Figure 5 shows that several of the New England states, several of the states in the upper South Atlantic division, Minnesota, Illinois, Arizona, and Hawaii were among those states which had both above average physician-population ratios in primary care and had above average changes in these ratios (cf. Figure 1). Two states -- Idaho and South Dakota -- which were among the lowest in terms of their physician-population ratios actually experienced a decline in this ratio between 1968 and 1976. These were the only states in which such a decline occurred.

Non-federal Secondary and Tertiary Care

Unlike changes in the primary care physician-population ratios discussed above, changes in the ratio of physicians to population in secondary and tertiary care were more rapid in those states which had relatively low physician-population ratios. This difference can be seen clearly in a comparison of Figure 6 with Figure 5.

Relative changes in the physician-population ratios for non-primary care physicians were especially high in the South and in the West. These increases, particularly in the "sun belt" area of the South and Southwest took place despite the rapid growth of population in these states. In the case of physicians in nonprimary patient care, then, changes in the distribution of the physician population have more than compensated for the population growth in the area, and have served to increase the availability of secondary and tertiary care physicians in states which have traditionally been underserved by these physicians. The fact that the increases in the physician-population ratio also occurred in several of the states in the West North Central and Mountain divisions which did not experience rapid growth of population is an indication that improvements in the nonprimary care physician-population ratios did not merely mirror population migration patterns, but rather have served to address some of the deficiencies in the distribution of physicians.

Total Non-federal Patient Care

As a result of the combination of the patterns of primary care and secondary and tertiary care, the changes in the ratio of total patient care physicians to the base population tended to be more moderate than either of the two component ratios (Figure 7). In general, states which had low physician-population ratios had more rapid rates of change in these ratios between 1968 and 1976. The South and the sun belt had relatively rapid changes in the physician-population ratio for patient care physicians, but the counterbalancing of the primary and nonprimary care trends caused more states to be nearly average in their experience. A total of 14 states had approximately average (within two percentage points on either side of the U. S. rate of change) changes in the ratio of patient care physicians to population. In contrast, only five states had changes in secondary and tertiary care ratios within this range, while nine states had approximately average changes in primary care ratios.

Non-federal Nonpatient Care

The pattern of change in the ratio of nonpatient care physicians to the base population is mixed (Figure 8). This finding is largely due to the relatively small numbers of such physicians in a given state. Patterns found in those states with large number of nonpatient care physicians tended to follow the general population trends. New York, Pennsylvania, and Massachusetts, which had population increases below the average, had declines in the ratio of nonpatient care physicians to population. California and Texas, which experienced rapid population growth in this period, had increases in the physician-population ratio and rapid relative change. Illinois had moderate population growth and the change in the ratio of nonpatient care physicians to population was nearly average.

SUMMARY AND CONCLUSIONS

Patterns of change in the location of physicians and in their distribution relative to the total population have been examined. Physicians, including those engaged in providing primary care, tend to be disproportionately located along the eastern seaboard and in several states in the West. This was the pattern extant in 1968 and it continues to be the pattern today. A number of the more sparsely populated states in the Midwest and in the Mountain division have physician-population ratios which are quite low relative to the national average.

Figure 4—Physician-Population Ratio, 1976: Non-federal Nonpatient Care Physicians

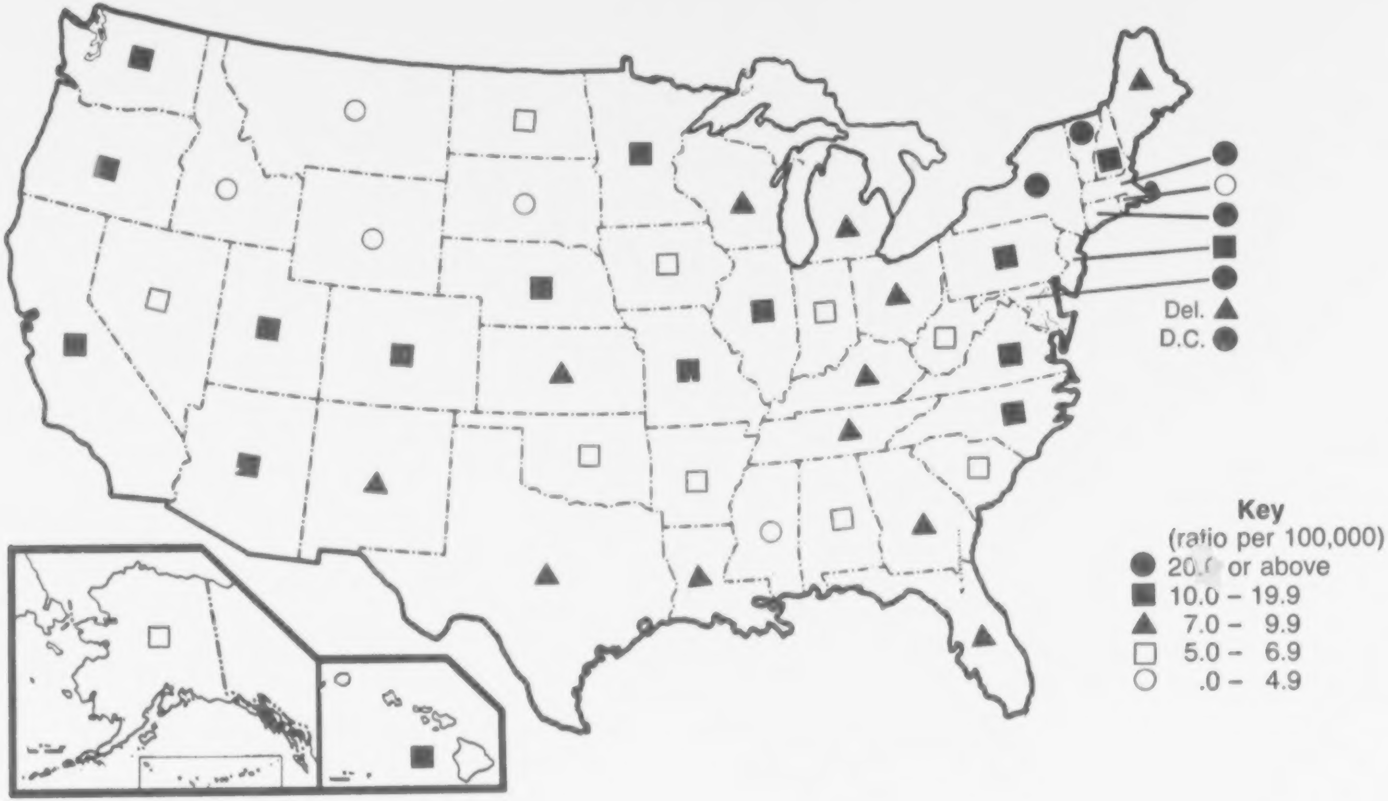

Del. ▲
D.C. ●
Key
(ratio per 100,000)
● 20.0 or above
■ 10.0 – 19.9
▲ 7.0 – 9.9
□ 5.0 – 6.9
○ .0 – 4.9

Figure 5—Index of Relative Change in the Physician/Population Ratio, 1968-1976: Non-federal Primary Care Physicians

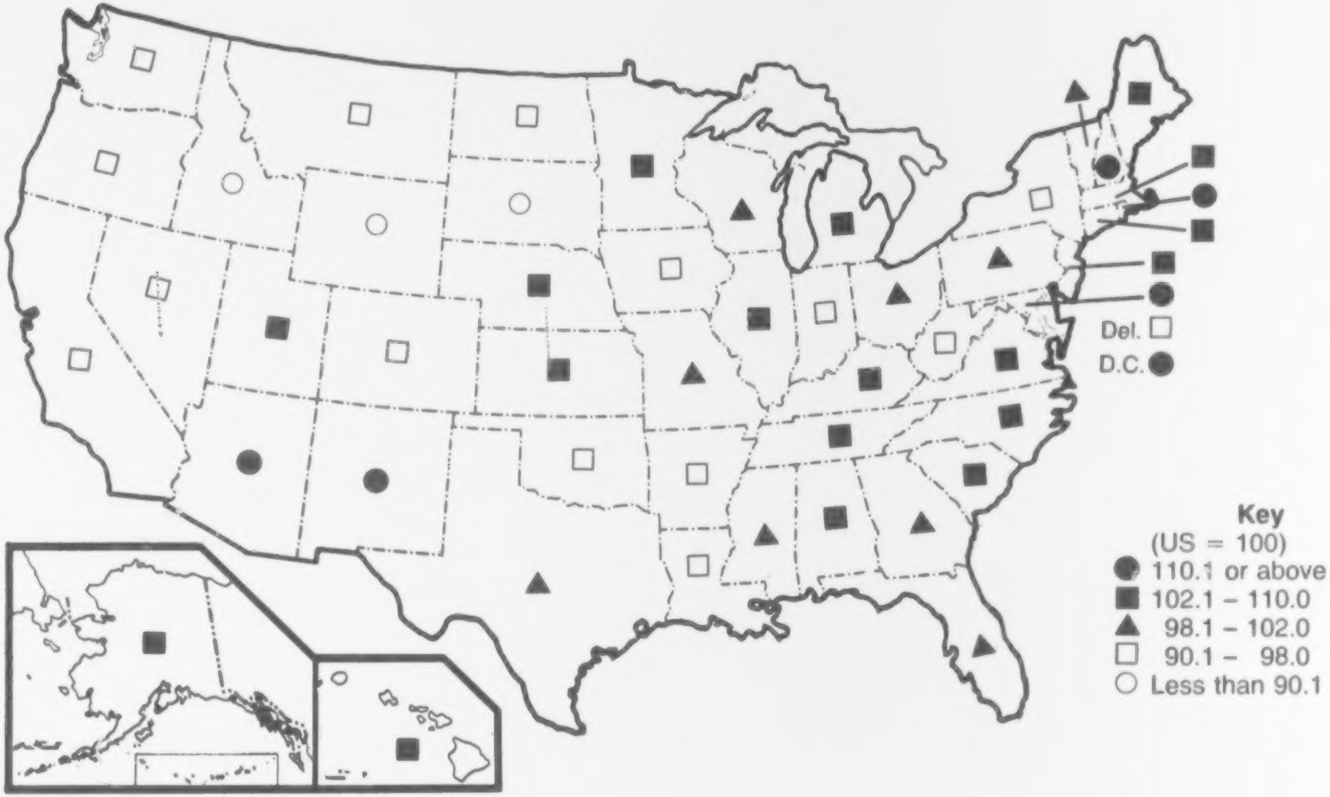

Del. □
D.C. ●
Key
(US = 100)
● 110.1 or above
■ 102.1 - 110.0
▲ 98.1 - 102.0
□ 90.1 - 98.0
○ Less than 90.1

Figure 6—Index of Relative Change in the Physician-Population Ratio, 1968-1976: Non-federal Secondary and Tertiary Care Physicians

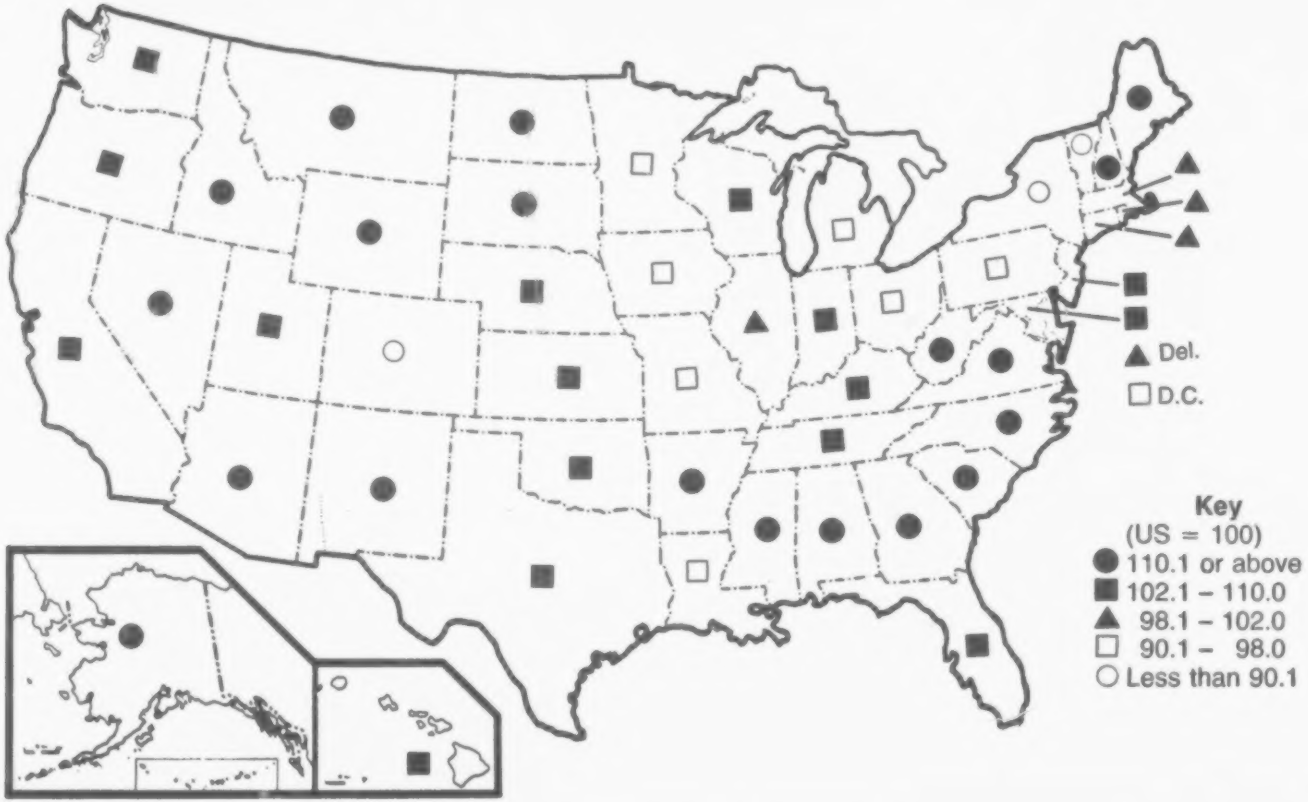
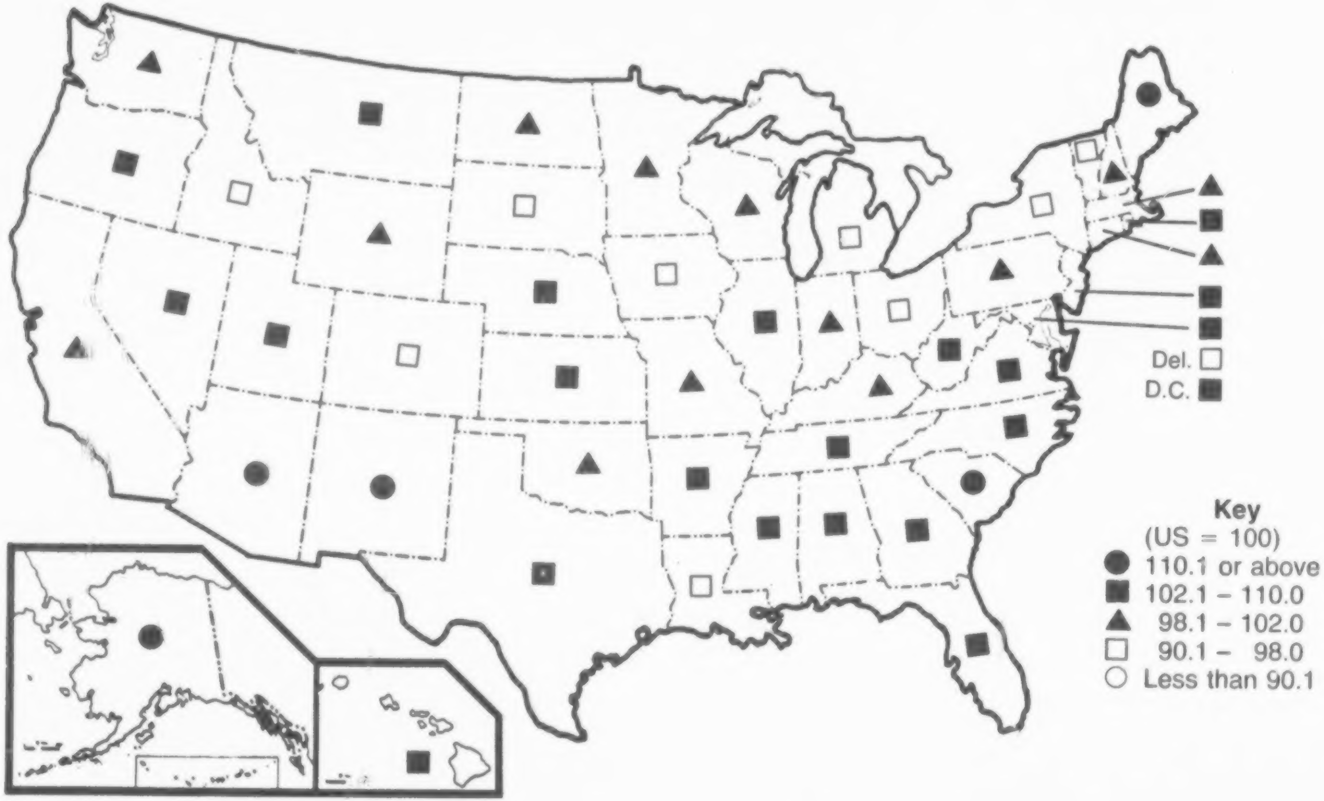

Del.
D.C.
Key
(US = 100)
● 110.1 or above
■ 102.1 – 110.0
▲ 98.1 – 102.0
□ 90.1 – 98.0
○ Less than 90.1

Figure 7—Index of Relative Change in the Physician-Population Ratio, 1968-1976: Non-federal Total Patient Care Physicians


Del. □
D.C. ■
Key
(US = 100)
● 110.1 or above
■ 102.1 – 110.0
▲ 98.1 – 102.0
□ 90.1 – 98.0
○ Less than 90.1

An examination of patterns of change in the physician-population ratios suggest that, to some extent, this pattern is changing. States which have traditionally been underserved by physicians are experiencing more rapid rates of increases in physicians than are states in the balance of the country, particularly with regard to nonprimary care physicians. Perhaps with the increase in the proportion of physicians in the secondary and tertiary specialties, there are greater incentives for these physicians to locate in relatively underserved areas. This pattern was not found, however, among primary care physicians. In fact, the greatest gains in physician-population ratios, both absolute and relative, were found among those states with relatively high physician-population ratios for primary care. From the data presented we are not able to discern whether this pattern is characteristic of the entire 1968-1976 period, or whether it has changed somewhat over this period. Increasing numbers of medical school graduates in the primary care fields may well contribute to a change in these patterns.

In general, physicians are attracted to the same parts of the country which have recently received large numbers of internal migrants. Many states in the sun belt experienced relatively rapid changes in the number of physicians, as did the New England states. Patterns of change in the physician population, however, do not follow exactly the total population trends. The resulting relative changes in the physician-population ratios have caused the distribution of physicians in the U. S. to become slightly more even among states in 1976 than in 1968.

References

American Medical Association. 1970. Distribution of Physicians, Hospital, and Hospital Beds in the U.S., 1968. Center for Health Services Research and Development. Chicago: American Medical Association.

_______. 1977. Physician Distribution and Medical Licensure in the U.S., 1976. Center for Health Services Research and Development. Chicago: American Medical Association.

Coordinating Council on Medical Education. 1975. Physician Manpower and Distribution: The Primary Care Physician. January, 1975. Chicago: Coordinating Council on Medical Education.

Schaffner, Richard, and Irene Butter. 1972. "Geographic Mobility of Foreign Medical Graduates and the Doctor Shortage: A Longitudinal Analysis." Inquiry 9, no. 1 (March) 24-33.

Relative Changes in Physicians' Fees: Evidence from the Consumer Price Index *by Philip G. Cotterill**

INTRODUCTION

As public attention focuses more and more on the rising cost of medical care, the rate of increase in physicians' fees receives closer scrutiny. Two basic comparisons among rates of increase are of special interest: (1) physicians' fees versus prices in the economy as a whole; and (2) physicians' fees versus other medical care prices. This paper draws these comparisons for the time periods: (1) the year 1977; (2) the year 1977 versus the year 1976; and (3) the years 1966-77, a period marked by the implementation of Medicare and Medicaid (1966) and by general wage and price controls, including controls on physicians' fees and other medical care prices (August 1971 - April 1974).

There are several sources of bias in the physicians' fee component of the consumer price index. Some of these factors tend to overstate the rate of increase in physicians' fees, while others tend to understate it. However, it is not possible to quantify all these factors in order to determine their net impact. Therefore, this paper merely reports the observed changes in the physicians' fees index, at the same time recognizing that it is not a perfect measure.

CHANGES IN SELECTED COMPONENTS OF THE CONSUMER PRICE INDEX DURING 1977

Physicians' Fees Versus All Items and All Services

During 1977, physicians' fees rose faster than either the all services or the all items components of the Consumer Price Index. As shown in Table I, physicians' fees increased 9.2 percent compared to 7.9 percent for all services and 6.8 percent for all items. Physicians' fees rose just less than one and one-sixth times faster than all services, and slightly more than one and one-third times faster than all items.

A closer look at the year 1977 shows that the fastest rate of increase in physicians' fees occurred during the first quarter of the

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*Ph.D., Research Associate, Center for Health Services Research and Development, American Medical Association. This article is an update of an article with the same title by Philip G. Cotterill and Barry S. Eisenberg, which appeared in the 1977 Profile of Medical Practice.

Table I—Annualized Percentage Changes in Selected CPI Components During 1977

SELECTED COMPONENTS	ENTIRE YEAR	FIRST QUARTER JAN.-MAR.	SECOND QUARTER APR.-JUNE	THIRD QUARTER JULY-SEPT.	FOURTH QUARTER OCT.-DEC.
All Items	6.8	9.3	8.3	4.9	4.6
All Services	7.9	9.4	8.0	8.5	5.8
Medical Care	8.8	11.5	8.8	9.2	7.0
Physicians' Fees	9.2	12.2	9.0	8.4	7.0
Dentists' Fees	7.3	6.9	7.3	10.6	4.5
Hospital Service Charges	10.4	13.3	10.1	10.1	8.1

Source: CPI Detailed Report for Data Months January - December, 1977.

year when they rose at an annualized rate of 12.2 percent, significantly faster than the 9.2 percent average for the entire year. The annualized rate of increase declined to 9.0 percent during the second quarter, 8.4 percent in the third quarter, and 7.0 percent in the fourth quarter.

The all services index increased at an annualized rate of 9.4 percent during the first quarter of 1977, faster than the 7.9 percent increase for the entire year. In the second quarter the annualized rate of increase dropped to 8.0 percent. It rose again slightly in the third quarter to 8.5 percent, and then declined in the final quarter to 5.8 percent.

The all items index increased at an annualized rate of 9.3 percent during the first quarter of 1977, compared to the 6.8 percent increase for the entire year. During the second quarter, the annualized rate of increase was 8.3 percent. It dropped sharply during the second half of the year to 4.9 percent in the third quarter and 4.6 percent in the final quarter.

In comparing the rates of increase in the physicians' fees, all services and all items components of the CPI during 1977, the following points should be noted:

- Physicians' fees rose faster than either all services or all items during 1977. The only exception was the third quarter of the year when all services and physicians' fees increased at about the same rate (annualized rates of 8.5 percent and 8.4 percent).

- Both physicians' fees and all services showed their most rapid rates of increase during the first quarter of 1977 (annualized rates of 12.2 percent and 9.4 percent).

- The rate of increase of physicians' fees declined during the course of the year. However, that decline was not as pronounced as the sharp reduction, which occurred in the second half of 1977, in the all items rate of increase.

Rates of increase in the physicians' fees, all services, and all items indexes cited above are displayed graphically in Figure 1.

Physicians' Fees Versus Other Medical Care Components

Also shown in Table I, during 1977, the medical care index increased 8.8 percent, slightly less than the 9.2 percent increase in physicians' fees for the same period. Hospital service charges increased 10.4 percent during 1977, more than either physicians' fees or medical care as a whole. Dentists' fees increased 7.3 percent.

Physicians' fees, hospital service charges and medical care as a whole all registered their most rapid rates of increase during the first quarter of 1977 (annualized rates of 12.2, 13.3 and 11.5 percent). The rates of increase in physicians' fees and hospital service charges then declined during the remainder of the year. Hospital service charges increased at annualized rates of 10.1 percent during both the second and third quarters, and 8.1 percent during the final quarter. The medical care index rose at an annualized rate of 8.8 percent during the second quarter, 9.2 percent during the third quarter, and 7.0 percent during the fourth quarter. In contrast to physicians' fees and hospital service charges, the rates of increase in dentists' fees accelerated during the first three quarters of the year (annualized rates of 6.9, 7.3, and 10.6 percent). In the fourth quarter of 1977, the rate of increase of dentists' fees dropped sharply to an annualized rate of 4.5 percent.

In comparing the rates of increase in the physicians' fees, hospital service charges, dentists' fees, and medical care components of the CPI during 1977, the following points should be noted:

- Physicians' fees rose slightly more rapidly than the medical care index during 1977 (9.3 percent versus 8.8 percent).

- A quarter by quarter comparison of the annualized rates of change in physicians' fees and the medical care index reveals that physicians' fees outpaced medical care during both the first and second quarters (12.2 percent versus 11.5 percent and 9.0 percent versus 8.8 percent). During the third quarter, physicians' fees rose less rapidly than medical care as a whole (8.4 percent versus 9.2 percent). During the final quarter of the year, both physicians' fees and medical care rose at an annualized rate of 7.0 percent.

- Physicians' fees rose less rapidly than hospital service charges in every quarter of 1977 and for the year as a whole.

- Physicians' fees rose faster than dentists' fees in every quarter of 1977 with the exception of the third quarter, when dentists' fees rose at an annualized rate of 10.6 percent compared to 8.4 percent for physicians' fees.

Rates of increase in physicians' fees, hospital service charges, dentists' fees, and medical care cited above are displayed graphically in Figure 2.

Figure 8—Index of Relative Change in the Physician-Population Ratio, 1968-1976: Non-federal Nonpatient Care Physicians

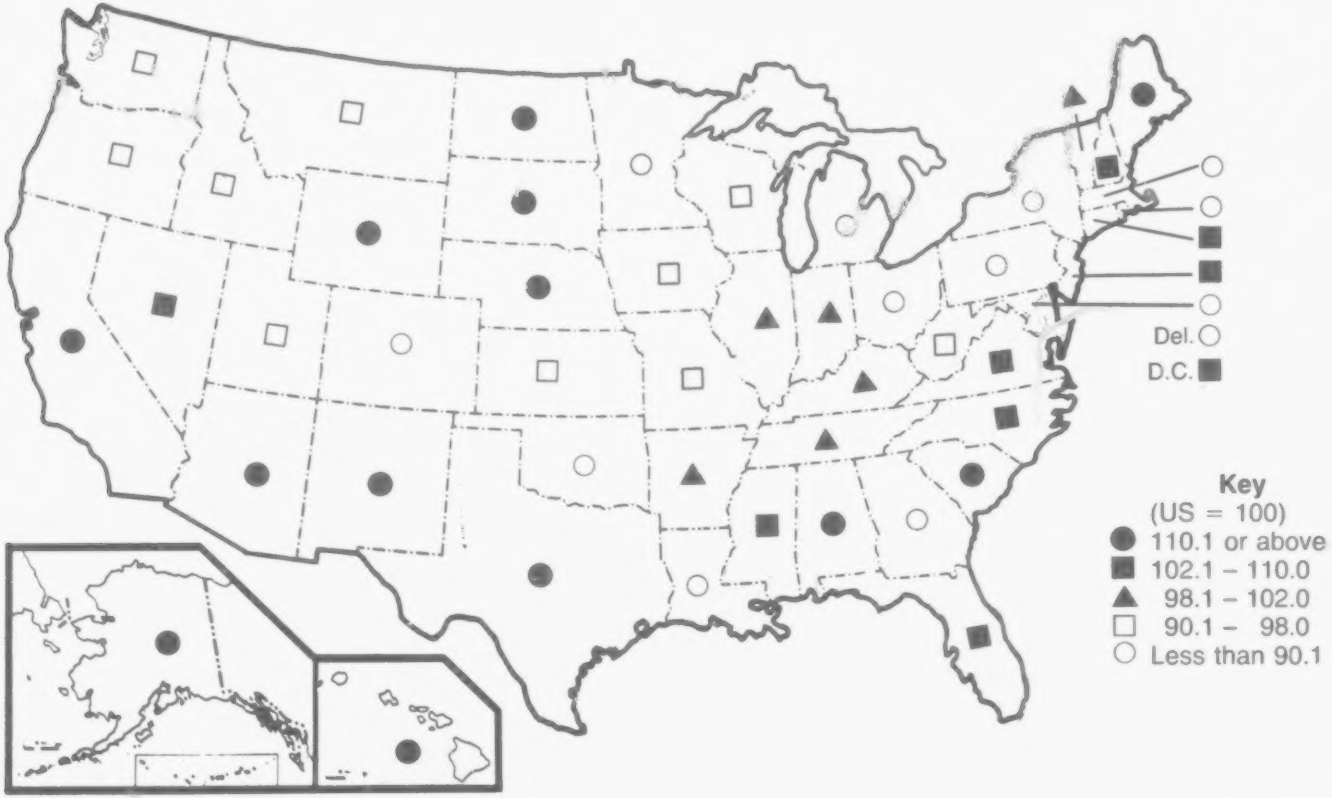
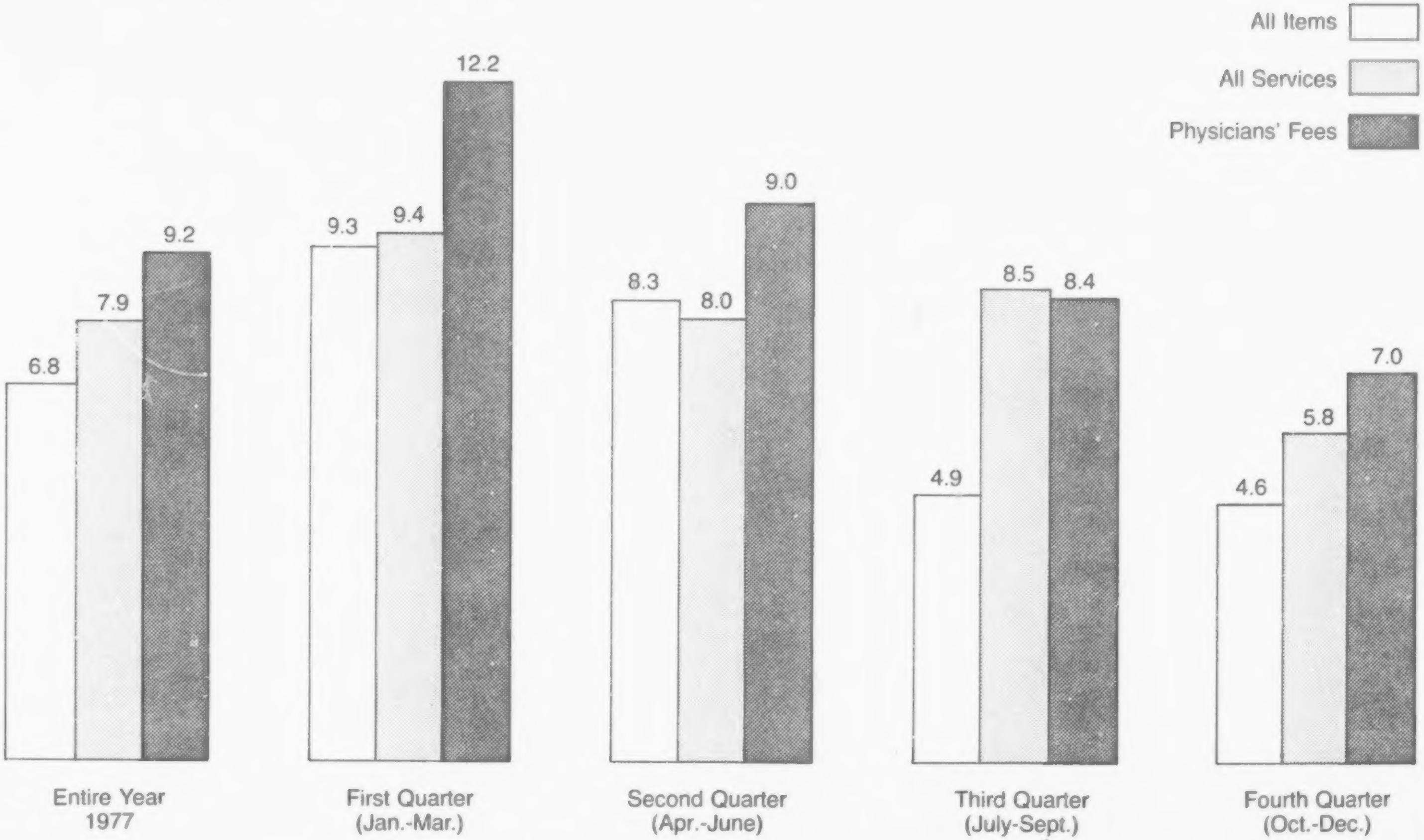
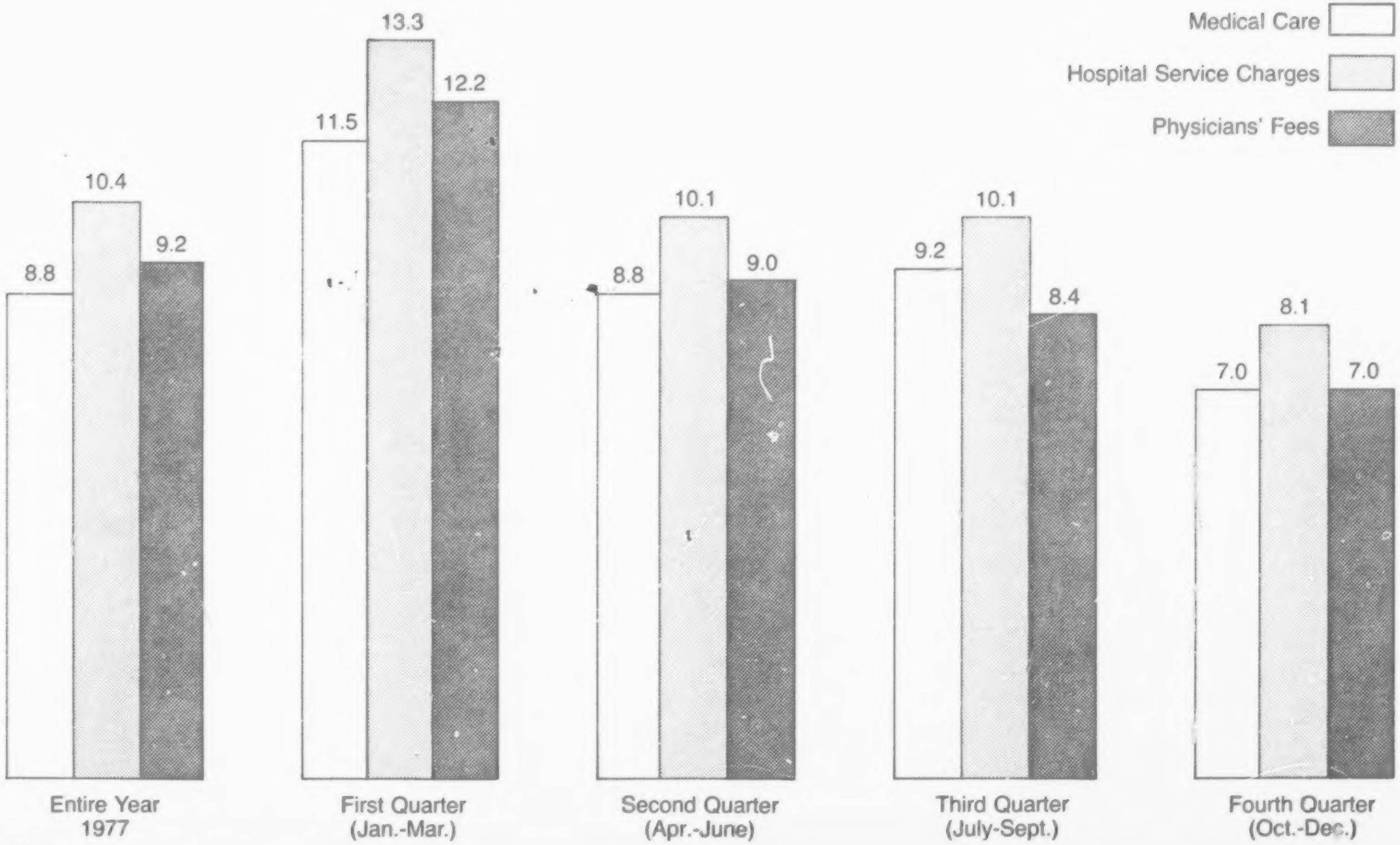

Del. ○
D.C. ■
Key
(US = 100)
● 110.1 or above
■ 102.1 – 110.0
▲ 98.1 – 102.0
□ 90.1 – 98.0
○ Less than 90.1

Figure 1—Annualized Percentage Changes in the Physicians' Fees, All Items and All Services Components by Quarter During 1977



Source: Table I

Figure 2—Annualized Percentage Changes in the Physicians' Fees, Hospital Service Charges and Medical Care Components by Quarter During 1977



Source: Table I

CHANGES IN SELECTED COMPONENTS OF THE CONSUMER PRICE INDEX DURING 1976 and 1977

Physicians' Fees Versus All Items and All Services

Physicians' fees rose at a 9.2 percent rate in 1977, compared to the 9.7 percent increase experienced in 1976 (Figure 3). Most of the reduction in the annual rate of increase in physicians' fees results from the fact that physicians' fees rose at an annualized rate of 12.2 percent during the first quarter of 1977, compared to 14.2 percent during the first quarter of 1976. A quarter by quarter comparison shows very similar rates of increase during the other three quarters of the two years (second quarter: annualized rates of 9.0 percent in both years; third quarter: 8.4 percent in 1977 versus 8.5 percent in 1976; fourth quarter: 7.0 percent in 1977 versus 7.3 percent in 1976).

Both the all services and all items indexes increased more rapidly in 1977 than in 1976 (all services: 7.9 percent versus 7.3 percent; all items: 6.8 percent versus 4.8 percent).

In comparing the rates of increase in the physicians' fees, all services and all items components of the CPI for 1976 and 1977, the following points should be noted:

- Physicians' fees rose slightly less rapidly in 1977 than in 1976. Both all services and all items rose more rapidly in 1977 than in 1976.

- While all services rose only slightly faster in 1977 than in 1976 (7.9 percent versus 7.3 percent), all items rose significantly faster in 1977 (6.8 percent versus 4.8 percent). The greater rate of increase in the 1977 all items index resulted from rapid increases in food prices during the first half of the year. All items rose at annualized rates of 4.9 percent and 4.6 percent during the third and fourth quarters of 1977.

Physicians' Fees Versus Other Medical Care Components

In 1976 physicians' fees rose less rapidly than the entire medical care index (9.7 percent versus 10.1 percent). However, in 1977 the situation was reversed with physicians' fees rising slightly more rapidly than medical care (9.2 percent versus 8.8 percent). Physicians' fees, hospital service charges and medical care all rose less rapidly in 1977 than in 1976. For hospital service charges, the rate of increase in 1977 was 10.4 percent compared to 11.4 percent in 1976. In contrast, dentists' fees rose more rapidly in 1977 (7.3 percent) than in 1976 (6.8 percent).

In comparing the rates of increase in the physicians' fees, hospital service charges, dentists' fees, and medical care components of the CPI for 1976 and 1977, the following points should be noted:

- Physicians' fees, hospital service charges and medical care as a whole all rose less rapidly in 1977 than in 1976. Among the major medical care components of the CPI, only dentists' fees rose more rapidly in 1977.

- The rate of increase of hospital service charges slowed more between 1976 and 1977 than did the rates of increase of physicians' fees or medical care as a whole (reductions of 8.8 percent versus 5.2 percent versus 3.0 percent).

CHANGES IN SELECTED COMPONENTS OF THE CONSUMER PRICE INDEX, 1966-1977

Physicians' Fees Versus All Items and All Services

In the twelve year period from 1966 through 1977, physicians' fees increased at a higher average rate than either the all items or all services indexes. As shown in Table II, physicians' fees increased at an average rate of 7.4 percent per year compared to all items and all services which increased at average annual rates of 5.6 percent and 6.4 percent.

As shown in Figure 4, the rate of increase of physicians' fees exceeded that of all items during the twelve year period, with the exception of the period of price controls (1971 - 1974). To a lesser extent, physicians' fees also increased more rapidly than all services. Despite differences in the rates of increase of these indexes, the pattern of changes over the twelve year period are similar.

A portion of the divergence between physicians' fees and all items and all services after 1972 may be attributed to price controls which were removed from the general economy before they were removed from physicians' fees.[1] Table III shows that during the period that physicians' fees were controlled (August 1971 - April 1974), physicians' fees rose at a lower annualized rate (4.0 percent) than either all items (6.3 percent) or all services (5.1 percent).

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[1] Controls were either modified or terminated for most sectors of the economy beginning in January 1973. However, controls were continued for major segments of the food, construction and health care sectors through April 1974.

In comparing physicians' fees to all items and all services from 1966 through 1977, the following points should be noted:

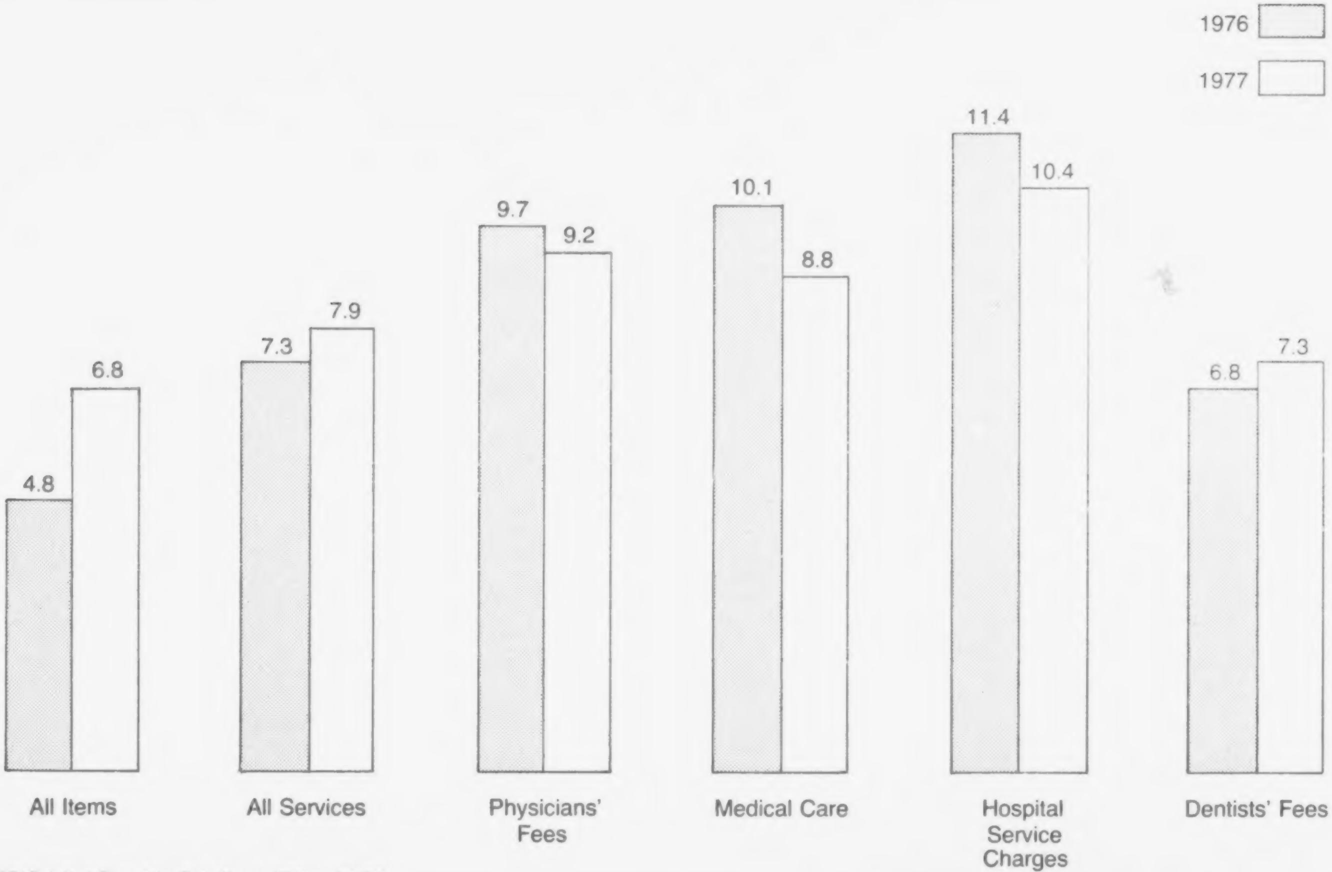
- Over the past twelve years physician' fees have increased at a greater average rate than prices in general.
- While the rate of increase in physicians' fees has been greater, the patterns of increase in physicians' fees, all services and all items have been similar.
- During the period of controls on physicians' fees (August 1971 - April 1974, physicians' fees rose at a lower annualized rate (4.0 percent) than either all items (6.3 percent) or all services (5.1 percent).
- Since the end of controls on physicians' fees (April 1974 - December 1977), physicians' fees have risen at a higher annualized rate (11.0 percent) than either all items (7.2 percent) or all services (8.7 percent).
- The fact that physicians' fees increased more rapidly than all services since the end of controls may reflect the fact that controls were retained on physicians' fees longer than on the economy in general.

Physicians' Fees Versus Other Medical Care Components

As shown in Table II, in the same twelve-year period, 1966-1977, physicians' fees increased slightly more rapidly than the medical care index as a whole, but much less rapidly than some hospital service charge components. In this period physicians' fees increased at an average annual rate of 7.4 percent compared to 7.0 percent for medical care. Over the same period, hospital semi-private room charges increased at an average rate of 12.2 percent per year, and dentists' fees increased at an average rate of 6.0 percent per year. Percentage changes in these four indexes are displayed graphically in Figure 5.

A closer look at the period of economic controls, as shown in Table III, indicates that prior to and during economic controls, medical care, physicians' fees and dentists' fees all had similar rates of increase. In the precontrol period (December 1966 - August 1971) medical care was increasing at an annualized rate of 5.8 percent compared to 6.0 percent for physicians' fees and 5.4 percent for dentists' fees. During the period of economic controls, annualized rates for all three indexes fell with medical care falling to 4.3 percent, physicians' fees to 4.0 percent and dentists' fees to 4.2 percent, but still with similar magnitudes. After economic controls, however, a

Figure 3—Percentage Changes in Selected Components During 1976 and 1977



Source: *CPI Detailed Report* for Data Years 1976 and 1977

Table II—Annual Percentage Changes in Selected Components of the Consumer Price Index, 1966-77[a]

Selected Component	Avg. Annual Increase 1966-1976	1965 -66	1966 -67	1967 -68	1968 -69	1969 -70	1970 -71	1971 -72	1972 -73	1973 -74	1974 -75	1975 -76	1976 -77
All Items	5.6	2.9	2.9	4.2	5.4	5.9	4.3	3.3	6.2	11.0	9.1	5.7	6.5
All Services	6.4	3.9	4.4	5.2	6.9	8.1	5.6	3.8	4.4	9.3	9.6	8.3	7.7
Medical Care	7.0	4.4	7.1	6.1	6.9	6.3	6.5	3.2	3.9	9.3	12.0	9.5	9.5
Physicians' Fees	7.4	5.8	7.1	5.6	6.9	7.5	6.9	3.1	3.3	9.2	12.3	11.2	9.3
Dentists' Fees	6.0	3.3	5.0	5.5	7.0	5.8	6.4	4.2	3.1	7.6	10.2	6.4	7.5
Hospital Serv. Charges[b]	--	--	--	--	--	--	--	--	3.5	9.0	14.9	12.4	10.4
Semiprivate Room Charges	12.2	10.2	19.8	13.6	13.4	12.9	12.2	6.6	4.7	10.7	17.2	13.8	11.5
Operating Room Charges	11.7	6.9	12.9	11.5	15.4	10.6	9.7	8.0	6.2	12.4	18.9	14.8	13.0

[a] Percentage changes are computed using the average annual indexes for each year.

[b] Index established January 1972.

Source: Consumer Price Index for data years 1965-74. CPI Detailed Report for data years 1974-77.

Figure 4—Annual Percentage Changes in the Physicians' Fees, All Items and All Services Components, 1966-77

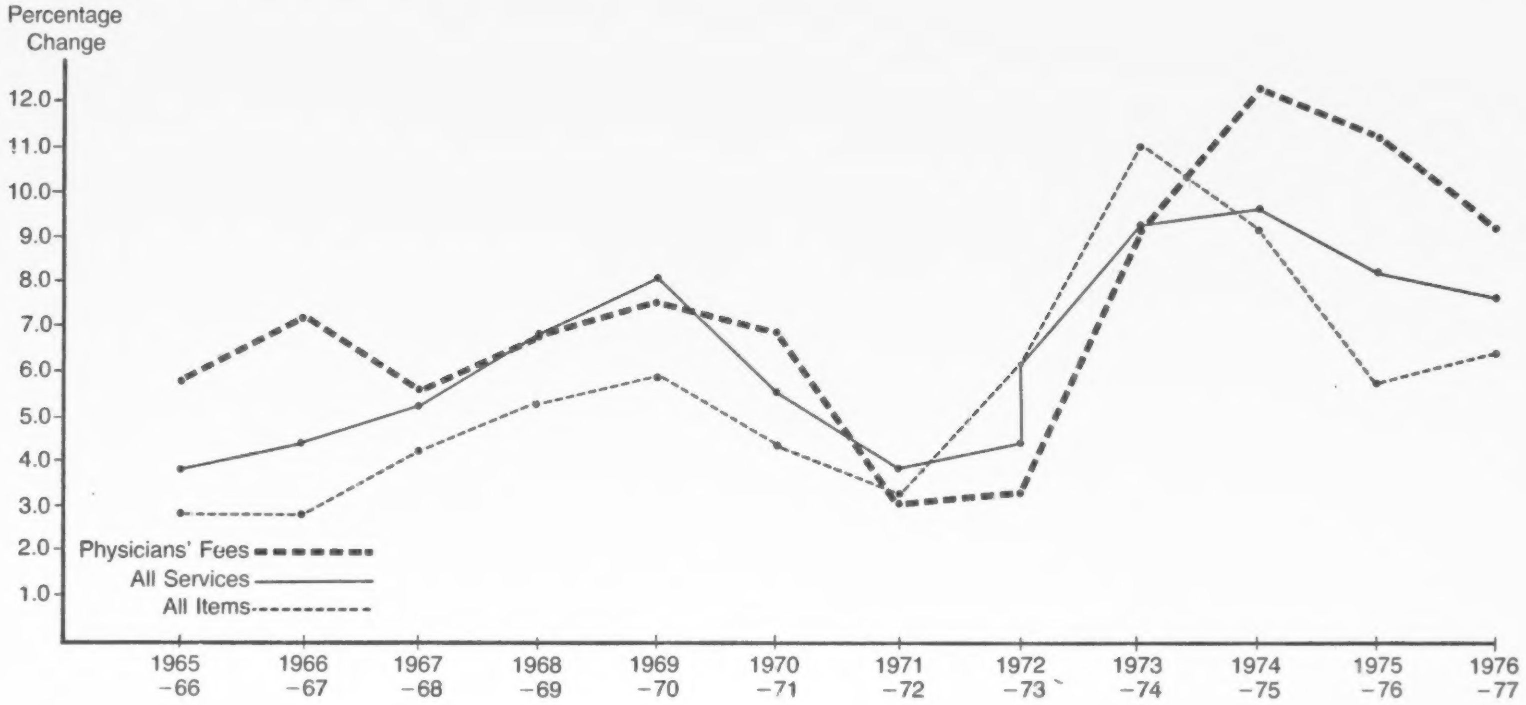


Figure 5—Annual Percentage Changes in the Physicians' Fees and Other Selected Components, 1966-67

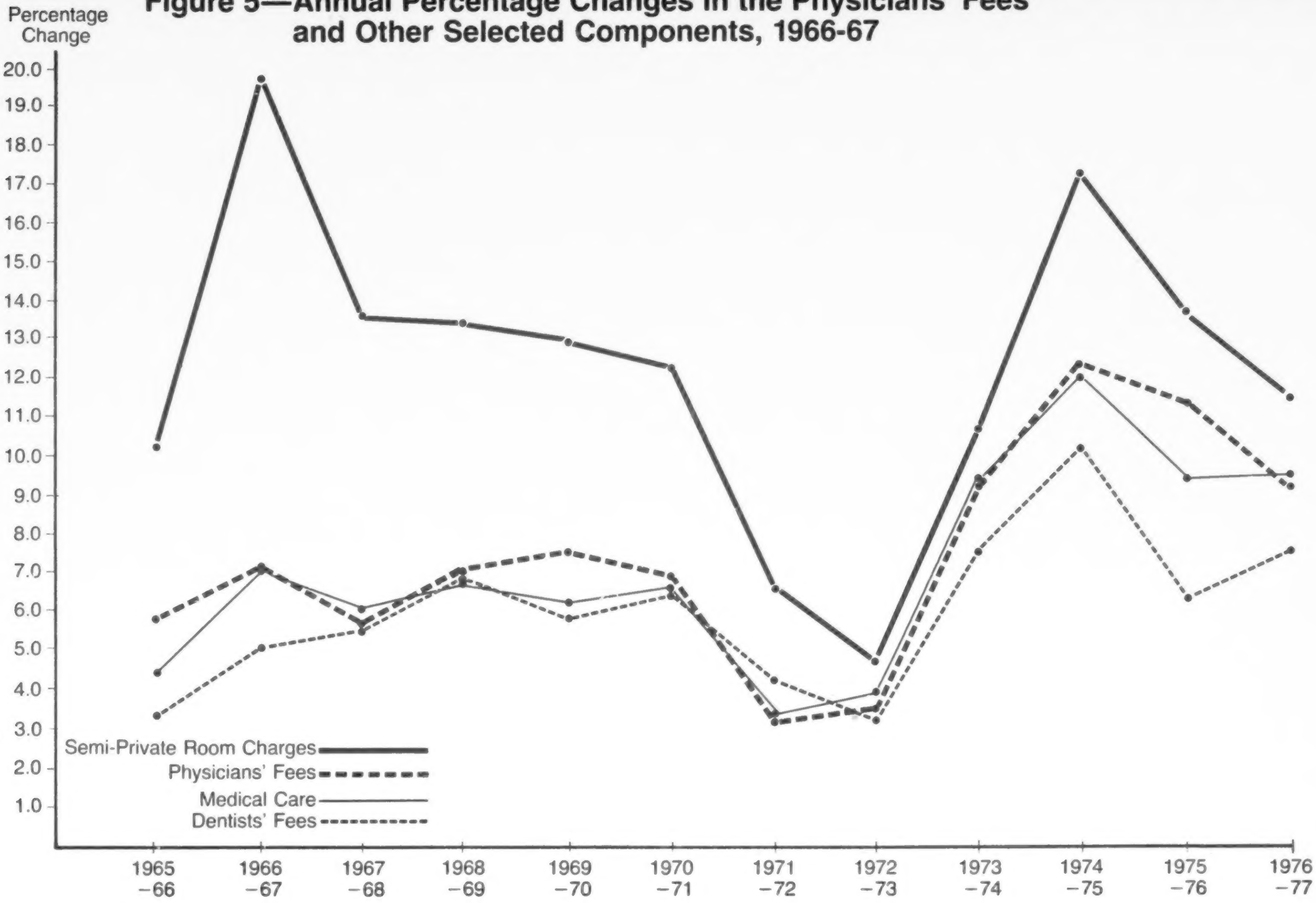


Table III—Annualized Percentage Changes in Selected Components of the Consumer Price Index, Selected Periods, 1966-77

Selected Components	Precontrol Period (Dec. 1966-Aug. 1971)	Control Period (Aug. 1971-Apr. 1974)	Postcontrol Period (Apr. 1974-Dec. 1977)	1977 (Dec. 1976-Dec. 1977)
All Items	4.4	6.3	7.2	6.8
All Services	5.7	5.1	8.7	7.9
Medical Care	5.8	4.3	10.4	8.8
Physician's Fees	6.0	4.0	11.0	9.2
Dentists' Fees	5.4	4.2	8.2	7.3
Hospital Service Charges	--	--	12.6	10.4
Semiprivate Room Charges	11.4	5.7	14.2	10.8

Source: Consumer Price Index for data years 1965-74. CPI Detailed Report for data years 1974-77.

larger divergence appears as all three indexes increased relatively rapidly. Physicians' fees increased the most (11.0 percent), followed by medical care (10.4 percent) and dentists' fees (8.2 percent).

Of course a large portion of the medical care index is represented by hospital costs. Increases in hospital costs have consistently led increases in all other medical care components over the past twelve years. The period of economic controls was no exception. During the control period, semiprivate room charges increased at an annualized rate of 5.7 percent compared to 4.3 percent for medical care. Since economic controls ended, semiprivate room charges have increased at an annualized rate of 14.2 percent, and hospital service charges have increased at an annualized rate of 12.6 percent compared to 10.4 percent for medical care. In 1977, hospital service charges increased 10.8 percent compared to 8.8 percent for medical care as a whole.

In comparing physicians' fees to other medical care components in the 1966 through 1976 period, the following points should be noted:

- During the twelve-year period, 1966 through 1977, physicians' fees increased slightly faster on the average than did medical care as a whole.
- During this twelve-year period, physicians' fees increased at a significantly lower rate than the hospital service charge components examined.
- In the entire postcontrol period, April 1974 through December 1977, physicians' fees have risen at a slightly greater annualized rate than has medical care as a whole (11.0 percent compared to 10.4 percent).
- Also, since the end of controls, hospital service charges have continued to lead increases in the medical care index.

SUMMARY

Since 1975 the rate of increase of physicians' fees has been declining. During 1977 physicians' fees rose 9.2 percent compared to 9.7 percent in 1976. In contrast, all items and all services rose more rapidly in 1977 than in 1976. Nevertheless, physicians' fees continued to rise faster than either the all services or all items indexes.

Over the entire period examined, 1966-1977, physicians' fees increased at a faster average rate than the all services and all items indexes. Physicians' fees have also risen faster than medical care as a whole. However physicians' fees increased at a significantly lower rate than the hospital service charges components which are available for this period.

Trends in Physicians' Incomes, Expenses and Fees: 1969-1976 *by Barry S. Eisenberg**

Concerns over the rising costs of medical care continue to focus attention on the costs of physicians' services. Particular attention has been paid recently to the levels and rate of increases in physicians fees and incomes, as well as to how alternative physician reimbursement mechanisms would effect both physician remuneration and performance. A prerequisite for such discussion, however, is reliable data on physician related costs. The objective of this paper, which updates an earlier Profile article,[1] is to provide current, consistent data on physicians, incomes, expenses and fees over the 1969 to 1976 period. Examination of this period is of added interest in that it spans the Economic Stabilization Program period and thus provides insights into possible effects of a price freeze program on health care providers.

All data presented are from the AMA Center for Health Services Research and Development Periodic Survey of Physicians. Because of slight variations in treatment of certain groups of physicians, data presented in the following tables may not correspond exactly to previously published data. In general, any discrepancies between data presented here and those presented in earlier editions of the Profile of Medical Practice are not statistically significant.

NET INCOMES

Table I provides trend data on physicians before-tax average net income from medical practice. Compound growth rates over the seven year period 1969-1976 are also presented. In 1976, the average physician received a net income of $59,544 compared to $39,727 in 1969, which implies a compound rate of growth of 6.0 percent per year.

Examination of these net income figures by specialty indicates little change in the net income rankings among physicians. Surgeons and obstetrician-gynecologists ranked first and second in 1969 with net incomes of $48,848 and $43,690, respectively. As of 1976, these specialties continued their high relative rankings with net incomes of $73,245 and $68,800 respectively. Conversely, in 1969, psychiatrists and pediatricians ranked sixth and seventh among the seven specialty groups, with net incomes of $33,916 and $31,812, respectively. In 1976 these two specialties remained at the lower end of the income ladder with pediatricians and psychiatrists reporting average net incomes of $46,962 and $47,565. General practitioners, whose incomes increased at the relatively low rate of 4.6 percent over the seven year period reported the lowest average net incomes ($47,438) for 1976.

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[1] Barry S. Eisenberg. "Trends in Physicians Incomes, Expenses and Fees, 1969-74." Profile of Medical Practice, 1975/76. Chicago: American Medical Association, 1976.

In addition to general practitioners, pediatricians and psychiatrists also showed below average growth rates in net incomes, 5.7 percent and 5.0 percent, respectively. Surgeons and obstetrician-gynecologists, who reported the highest income levels in 1976, showed average rates of growth in net income over the 1969 to 1976 period.

Economic controls appear to have had important effects on the levels and rates of change of net incomes. In 1970, the last full year before controls, net incomes increased 5.2 percent. In 1971, incomes increased at a greater rate of 8.3 percent. During 1972 and 1973, the two full years of controls, incomes increased at a much slower rate of 4.3 percent and 2.8 percent, respectively. In 1975, the first full year after controls had ended, incomes increased 8.4 percent. In 1976, the rate of increase in net income slowed down to 5.6 percent which approximates the 5.2 percent level of change before controls were instituted.

PRACTICE EXPENSES

Practice expenses have recently been of increasing interest mainly because of two factors. First, during the period of economic controls it was felt by many physicians that some practice expense items, such as rent, salary of workers, and supplies were not being controlled as effectively as were their own fees. Second, increases in professional liability premiums have resulted in large increases in total practice expenses for some groups of physicians. Expenses are, of course, also of interest to consumers to the extent that increased costs are passed on to patients in the form of higher fees. Table II presents average total tax-deductible professional expenses reported by physicians and compound growth rates over the period 1969 through 1976.

The typical physician had expenses of $42,443 in 1976 and $21,224 in 1969, which implies a compound growth rate of 10.4 percent per year. These figures vary widely by specialty. Psychiatrists, anesthesiologists, surgeons and obstetrician-gynecologists showed the largest relative increases in expenses over the seven year period. Anesthesiologists had the highest increase at 13.6 percent. Among the specialties with relatively low increases in expenses were general practice and pediatrics with yearly growth rates of 8.4 percent and 9.9 percent, respectively.

The important impact of economic controls on practice expenses is revealed by examination of yearly percentage increases. For example, pediatricians showed an increase in expenses of approximately 32 percent during 1970 (before controls) compared to an average increase in expenses only slightly over 9 percent during the next four years. Similarly, psychiatrists showed a 44 percent increase in expenses in 1970 compared to an average annual increase of under 4 percent in the following four years. Since the end of economic controls expenses for pediatricians and psychiatrists have increased at annual rates of 10.5 percent and 19.0 percent, respectively.

FEES

The final area to be examined in this paper is changes in physicians' fees. Table III presents average fee charged for an initial office visit for selected specialties for the years 1969 through 1976;[1] no comparable data point is available for 1972. Compound growth rates over the entire seven year period are also presented.

Over the entire seven year period, 1969-76, physicians increased their charges for initial office visits at a rate of 9.9 percent per year. This varies by specialty, with general practitioners, internists, and obstetrician-gynecologists showing the largest growth in fees of 9.5 percent, 9.5 percent and 11.4 percent respectively. Psychiatrists and surgeons showed the lowest relative increases at 7.5 percent and 8.8 percent, respectively. Pediatricians also showed below average rates of fee increases.

The effect of economic controls on fees charged for initial office visits is evident. For all specialists, in the two year period of 1971 to 1973, the average charge increased slightly over 6 percent. For some specialty groups changes in fees during this period were negligible. This compares to an 11.2 percent fee increase for all specialists in 1970.

Relatively large fee changes occuring in 1974 after the expiration of controls are also evident. For all specialists in 1974, fees charged for initial office visits increased to $19.55 from $16.98, or slightly over 15 percent.[2] By 1976, the average fee for an initial office visit for all specialties had increased to $24.86, or a rate of growth of 12.8 percent since the end of controls in 1974. To the

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[1] Fees for initial office visits are frequently used by researchers as a proxy for general fee levels.

[2] Economic controls for physicians expired April 30, 1974. 1974 fee data presented were collected in November and December of 1974, at least six months after controls ended.

Table I—Average Net Income from Medical Practice by Specialty, 1969-76

Specialty	1969	1970	1971	1972	1973	1974	1975	1976*	Compound Rate of Growth 1969-76
All Specialties	$39,727	$41,789	$45,278	$47,240	$48,574	$51,997	$56,361	$59,544	6.0%
General Practice	34,734	33,859	39,823	41,277	41,915	44,727	45,410	47,438	4.6
Internal Medicine	37,630	40,251	42,869	44,692	47,809	51,390	56,982	60,459	7.0
Surgery	48,848	50,701	54,045	56,041	57,228	60,510	68,226	73,245	6.0
Pediatrics	31,812	34,799	38,503	38,879	41,166	42,112	44,250	46,962	5.7
Obstetrics-Gynecology	43,690	47,094	51,062	53,165	55,357	61,693	63,316	65,800	6.0
Psychiatry	33,916	39,896	37,248	39,124	38,536	41,258	44,822	47,565	5.0
Anesthesiology	39,647	39,432	47,293	49,536	48,092	54,365	57,063	60,059	6.1

*Estimated by physician respondents.

Source: Periodic Survey of Physicians, 1972-1976. Center for Health Services Research and Development, American Medical Association.

Table II—Average Total Tax Deductible Professional Expenses by Specialty, 1969-76

Specialty	1969	1970	1971	1972	1973	1974	1975	1976*	Compound Rate of Growth 1969-76
All Specialties	$21,224	$24,279	$28,919	$31,318	$32,176	$33,985	$38,481	$42,443	10.4%
General Practice	24,170	24,183	32,060	34,543	33,961	36,737	38,645	42,407	8.4
Internal Medicine	21,352	24,951	28,265	31,269	33,983	35,813	40,390	45,567	11.4
Surgery	25,474	27,065	32,863	35,750	38,009	39,273	49,115	54,779	11.6
Pediatrics	18,898	24,887	28,469	29,994	32,392	29,985	34,558	36,624	9.9
Obstetrics-Gynecology	23,303	27,735	33,337	36,461	37,172	41,855	48,535	54,377	12.9
Psychiatry	9,258	13,287	12,973	14,091	14,329	14,009	18,708	19,842	11.5
Anesthesiology	9,095	11,180	12,699	13,937	13,973	19,290	20,000	22,207	13.6

*Estimated by physician respondents.

Source: Periodic Survey of Physicians, 1972-1976. Center For Health Services Research and Development, American Medical Association.

Table III—Average Fee for Initial Office Visit by Specialty, 1969-76

	1969	1970	1971	1973	1974	1975	1976	Compound Rate of Growth 1969-76
All Specialties	$12.80	$14.23	$16.00	$16.98	$19.55	$21.20	$24.86	9.9%
General Practice	7.83	8.46	9.65	10.74	12.03	13.11	14.80	9.5
Internal Medicine	16.58	17.81	20.38	20.51	23.11	26.11	31.27	9.5
Surgery	12.93	14.72	16.43	17.69	18.87	20.81	23.29	8.8
Pediatrics	9.48	9.95	11.18	12.20	14.49	16.18	17.45	9.1
Obstetrics-Gynecology	13.14	14.23	17.59	19.68	22.07	23.57	27.41	11.1
Psychiatry	30.27	32.64	35.58	37.51	41.39	44.61	50.15	7.5

Note: No comparable data point is available for 1972.

Source: Periodic Survey of Physicians, 1972-1976. Center For Health Services Research and Development, American Medical Association.

extent that these relatively large fee increases represent adjustment from the control period, smaller increases would be expected in the future.

EXPENSES, FEES AND NET INCOMES

Table IV summarizes the data presented in Tables I through III listing compound growth rates for each of the three categories over the seven year period 1969 through 1976. The ratio of expense change to the change in fee for initial office visits is also presented (column 3). These ratios give an indication of how fees have changed relative to changes in operating expenses.[1] A ratio of 1.0, for example, would indicate that fees have kept pace with expenses, while a ratio greater than 1.0 would imply that expenses have, since 1969, increased at a faster rate than general fee levels. As shown in column 3, for all specialty groups, expenses appear to have increased at a slightly faster rate than general fee levels. This varies widely by specialty group with psychiatrists (1.50) incurring the largest increase in expenses relative to fees. General practitioners (.88) experienced increases in expenses slightly less than fee increases.

Relating column 3 to net income experience shown in column 4 it is seen that, in general, large relative increases in expenses relative to fees are associated with below average rates of increase in net income. For example, psychiatrists, as was pointed out above, had a relatively low rate of increase in net income. Table 4 indicates a portion of this relatively low increase in net income may be explained by large increases in expenses which were not offset by increases in fees. On the other hand, obstetrician-gynecologists, whose fees stayed relatively on par with expenses, experienced an average growth in net income. Surgeons experienced a relatively high increase in expenses relative to fees but also managed a relatively high increase in net income, providing an exception to the general fee-expense-income pattern, although for surgeons it is less likely that the initial office visit is representative of the entire fee schedule. It must also be emphasized that part of these relationships are undoubtedly due to changing utilization patterns which are not covered in this paper.

SUMMARY AND CONCLUSION

This article has presented a financial overview of physicians' office practice, during the five year period 1969 through 1976. Trends in physicians' net incomes, practice expenses, and fees for initial office visits suggest that economic controls, in effect from August 1971 through April 1974, had significant impact on the economics of medical practice. Furthermore, comparisons of growth rates for these three elements suggest that, for most specialists, increases in practice expenses exceeded the rate of increases in fees and that this had a depressing effect on the rate of change in physicians' net income.

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[1] These ratios must be interpreted cautiously since as mentioned above, fee for initial office visit is only a proxy for a general fee level, and since the fee levels are not adjusted for possible shifts in utilization.

Part II—Health Services Research: Selected Papers

The articles of this section are intended to acquaint the reader with current research on topics in medical practice as well as in the broader health field. To present a range of views, this section contains articles by authors outside the AMA as well as by researchers within the Association. All papers reflect the authors' interpretations of the issues discussed and are not intended as statements of AMA policy.

The apparent positive relationship between the level of physicians' fees and the number of physicians per capita has led to the development of two related hypothesis: the physician-induced demand hypothesis and the target-income hypothesis. The first holds that physicians can influence the demand for their services while the latter argues that physicians set a target income and adjust demand and fees to achieve it. In "The Physician - Induced Demand and Target - Income Models: A Survey of The Issues," Philip Cotterill critically reviews the literature on these hypotheses.

In "Cost Effective Clinical Decision Making," Duncan Neuhauser examines the process of making medical decisions. The article rejects the idea that the medical profession should prolong life at any cost. The author argues, rather, that medical decisions should be based on an analysis of the social costs and benefits of the possible alternatives.

Graduate medical education in hospitals has two opposing effects on hospital costs. On one hand, costs are increased by the need to provide teaching resources. On the other hand, residents may substitute for relatively expensive staff physicians and, thereby, lower costs. Using governmental data, Larry Freshnock examines the net effects of these opposing forces in "The Effect of Graduate Medical Education on Hospital Expenditures, U. S. 1970."

Much of the focus of health care cost containment through regulation has been on hospitals. Maryland was one of the first states to institute a comprehensive hospital rate regulation program. In "Hospital Reimbursement and Utilization Incentives: A Maryland Experiment," Harold Cohen and John Cook describe the development of hospital rate regulation in Maryland. The focus of the article is on an innovative regulatory scheme which allows hospitals lattitude in decision making but also provides them with incentives for efficiency.

Several researchers have noted that most studies of hospital costs exclude physicians' services provided in the hospital. Carson

Bays, in "Admitting Physicians and Returns to Scale in the Production of Hospital Services," investigates the relationship between hospital size and per unit cost when physicians' services are considered as inputs into the production of hospital services. The study employs data from short term, general, nonteaching hospitals in California.

The Physician-Induced Demand and Target-Income Models: A Survey of the Issues *by Philip G. Cotterill**

INTRODUCTION

Concern over rising health care costs has generated increased interest in understanding the forces which determine physicians' fees and their rate of increase. Efforts to explain why health care costs in general, and physicians' fees in particular, have risen faster than other prices in the economy frequently stress that the market for health care is fundamentally different from other markets. Some analysts have concluded that the differences are so great that policies to limit price inflation, correct "shortages," and restrain "unnecessary" utilization cannot be based on conventional supply and demand models (for example, Evans, 1974).

The physician-induced demand and target-income models are the chief alternative models of physicians' economic behavior which have been put forth by those economists who believe that traditional demand and supply analysis is not applicable to the health care sector. This paper provides a critical review of these models. Specifically, the paper provides background information on the origins of the physician-induced demand and target-income models; presents contrasting interpretations of the empirical findings which allegedly support these hypotheses; and discusses some additional limitations of these models as explanations of physicians' behavior.

BACKGROUND

Both the physician-induced demand and target-income models originated as attempts to explain a set of empirical findings which appear to be inconsistent with the laws of supply and demand.

The empirical findings, which are documented in Table I, are: 1) Physicians' fees tend to be higher in cities where physician density (the physician-population ratio) is greater; 2) Physicians' hours of work and total patient visits tend to be lower in cities where physician density is higher; and 3) Per capita utilization of medical services tends to be greater in cities where physician density is greater. As indicated in Table I, these empirical findings, especially the one regarding fees, have not been observed in all existing studies. Further discussion of these contrary results appears later in this paper.

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*Ph.D., Research Associate, Center for Health Services Research and Development, American Medical Association. The views expressed in this paper are the author's and do not necessarily reflect the views of the AMA.

Both the physician-induced demand and target-income models can be understood as a description of physicians' responses to an increase in the supply of physicians relative to population in a local market area. According to these models, an increase in physician density tends to offer the individual physician fewer patients and shorter hours of work. In an effort to maintain his income in the face of reduced demand for his services, the individual physician is assumed to raise his fees and expand the services he provides for his remaining patients. The term, physician-induced demand, refers to this increase in services provided. Proponents of this view argue that the increased services take the form of higher elective surgery rates, additional tests, and return visits.

While the physician-induced demand hypothesis does not generally specify what determines the extent of this response, the target-income hypothesis postulates that physicians raise fees and/or expand services enough to earn whatever level of income they select as a target. The empirical findings regarding net income and physician density are mixed. Some researchers have found lower average net incomes where physician density is greater; others have found no significant differences in average net incomes as physician density varies. (See Table I.)

According to proponents of the physician-induced demand and target-income models, it is the power of physicians to raise their fees and expand the services they provide which makes the laws of supply and demand inoperable. It is argued that the physician can essentially make the demand for services whatever he wants it to be.

What enables physicians to raise their fees and expand the services they provide? Proponents of these models offer the following possible answers to this question: 1) Widespread insurance coverage makes patients insensitive to cost; and 2) A lack of patient information about medical matters results in the delegation of all utilization decisions to the physician.

CONTRASTING INTERPRETATIONS

The assumption of patients' ignorance about the medical services they receive plays an especially important role in the arguments of the proponents of physician-induced demand. For one thing, this assumption is used to support the claim that the greater per capita utilization of medical services in physician-dense areas consists largely of unnecessary services. An alternative interpretation is that the quality of care is higher in physician-dense areas. Redisch, et al. (1977) find that in physician-dense areas, office visits are longer and make less use of allied health personnel as a substitute for the physician. The greater availability of specialists and hospital facilities in physician-dense areas also suggests that higher quality care may be provided in these areas.[1] In addition, increased physician density has been found to be correlated with decreased patient travel and office waiting time (Sloan, 1977). Decreased time costs to patients in physician-dense areas could increase the demand for physicians' services in those areas.

Proponents of physician-induced demand interpret the evidence as indicating that physicians provide excess care in physician-dense areas. However, the facts are equally consistent with the view that insufficient care is provided in physician-sparse areas. While there are many problems in attempting to determine whether care is excessive or insufficient, it seems clear that in physician-dense areas, care is more physician-intensive and a wider range of services is available.

At the heart of the issue regarding the interpretation of the empirical findings is a concept which economists call "consumer sovereignty." In most sectors of the economy, if firms sell a different product mix in geographically distinct markets, those firms are regarded as responding to differences in consumer preferences. That is, the consumer is sovereign in determining what goods and services are produced. However, in health, the commonplace assumption is that due to the patient's lack of medical knowledge, the patient accepts the physician's decision about what services are needed. The patient is assumed to be a very poorly informed consumer of medical services.

Pauly (1977) has recently argued that the extent of applicability of the consumer ignorance assumption has been overstated. He argues that for a significant proportion of medical care purchases, information about the quality of care can be gathered from personal experience and the experience of friends. In addition, if enough people are well-informed, others can use price as an indicator of quality and need not become well-informed themselves. Finally, Pauly points out that in many cases, physicians may be as uncertain about the value of a particular service as is the consumer (for example, there is considerable disagreement among physicians regarding the value of annual check-ups, the indications for tonsillectomy, etc.). Pauly asserts that this "irreducible uncertainty" will be irrelevant to the functioning of the market, as long as consumers are aware of the limits of the physician's knowledge. In summary, Pauly suggests that for those types of medical care which consumers purchase relatively frequently, information is "sufficiently extensive to permit an outcome at least as close to the competitive equilibrium as might occur with other 'usual' services."

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[1] Existing research does not support the view that the higher fees in physician dense areas can be explained entirely by higher quality care in those areas, but research on differences in the quality of care is in the formative stage (Sloan and Feldman, 1977).

ADDITIONAL LIMITATIONS

On the theoretical level, the physician-induced demand and target-income models provide incomplete explanations of physicians' behavior. The central problem for the physician-induced demand model is to specify a priori the extent to which physicians will exercise their ability to generate additional services and/or raise their fees. The existence of a target income may appear to partially solve this problem. However, no satisfactory explanation exists of how target levels of income are determined. Reinhardt (1975) has suggested that the target level of income is based on the prevailing income distribution in the community, but this idea has not been developed to explain how specific income targets are determined or how they vary among physicians. In addition, target-income models have not specified how physicians decide upon the appropriate tradeoff between providing more services and charging higher fees in order to attain the target income.

Furthermore, there is some evidence which suggests that physicians are subject to greater economic constraints than are typically implied by the physician-induced demand and target-income models. For example, most studies find that while fees are higher where physician density is greater, net incomes are lower. (See Table 1.)

The difficulty of specifying these constraints a priori, so that physician-induced demand and target-income models become something more than post hoc explanations of empirical findings, is demonstrated by Evans (1974) and Sloan and Feldman (1977). Evans outlined a model in which physicians' discretionary power to induce demand for their own services creates disutility for physicians. Thus, the physician is assumed to weigh the extra disutility of inducing demand against that extra utility derived from the income generated by induced demand. The problem, which is acknowledged by Evans and clearly demonstrated by Sloan and Feldman, is that the model yields ambiguous predictions about the relationship between physician density and the other variables of interest: fees, hours of work, per capita utilization, and physicians' incomes. In other words, while the Evans model could be consistent with the empirical findings which the model attempts to explain, it could also be consistent with the conventional demand and supply model, or any number of other models.[1]

Taking a different approach, Satterthwaite (1977) has shown that it is not necessary to abandon traditional methods of economic analysis to explain the positive relationship between fee levels and physician density. Satterthwaite develops a monopolistically competitive model which explicitly incorporates the process of consumer search. The model applies to goods and services whose quality must be assessed by experience and need not be restricted solely to medical care.

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[1] There is an interesting corollary of the analysis presented by Sloan and Feldman: The intuitive plausibility of the physician-induced demand phenomenon need not be rejected by those who still believe that the conventional demand and supply model provides a better vehicle for the analysis of market behavior.

In addition to these theoretical problems with the physician-induced demand and target-income models, some empirical evidence exists which raises doubts about the validity of the key empirical finding that physicians' fees are higher in areas where physician density is greater. For example, the studies of Steinwald and Sloan (1974) and Sloan (1976), which are cited in Table I, found that the relationship did not hold for all specialties. In addition, the results obtained by Dyckman (1978) are very interesting in this regard. He finds that when fees are adjusted to account for differences in the cost of living among the cities in his sample, the positive relationship between fees and physician density becomes statistically insignificant. Furthermore, when he controls for both cost of living and regional differences, the relationship between fees and physician density becomes negative, although not statistically significant.

These results raise very serious questions about the empirical support for the physician-induced demand and target-income models. Dyckman chooses to ignore this problem, and argues that his results support the target-income hypothesis. Nevertheless, his results indicate that the higher fees in physician-dense areas may merely reflect the fact that prices in general are higher in those areas.

In some related work, Feldman (1976) estimated demand and supply models for physicians' office and hospital visits. He found that adjusting office and hospital visit fees for quality differences had a major effect on his results. The use of unadjusted fees yielded results inconsistent with his conventional demand and supply model. However, once the fees were quality-adjusted, the demand and supply equations for each type of visit yielded the expected signs (negative and positive) for the fee variables.

CONCLUSION

In summary, the physician-induced demand and target-income hypotheses are attempts to explain a set of empirical findings which seem, on the surface, to be inconsistent with demand and supply analysis. This paper provides several reasons for questioning the usefulness of the physician-induced demand and target income models: 1) Other explanations which do not conflict with demand and supply analysis are equally consistent with the empirical evidence; 2) Theoretical weaknesses of the physician-induced demand and target income models make them little more than post hoc attempts to

Table IV—Compound Rates of Growth in Expenses, Fees and Incomes, 1969-76

Specialty	(1) Compound Rate of Growth in Practice Expenses, 1969-76	(2) Compound Rate of Growth in Fee for Initial Office Visit, 1969-76	(3) Ratio of Expense Change to Fee Change (Col. 1/Col. 2)	(4) Compound Rate of Growth in Net Income, 1969-76
All Specialties	10.4%	9.9%	1.05	6.0%
General Practice	8.4	9.5	0.88	4.6
Internal Medicine	11.4	9.5	1.20	7.0
Surgery	11.6	8.8	1.31	6.0
Pediatrics	9.9	9.1	1.08	5.7
Obstetrics-Gynecology	12.9	11.1	1.16	6.0
Psychiatry	11.5	7.5	1.53	5.0

Source: Tables I, II, and III.

explain certain empirical observations; and 3) Not all empirical studies have confirmed the central piece of evidence upon which the physician-induced demand and target income models are based: that physicians' fees are higher where physician density is greater.

References

Benham, L., A. Maurizi, and M. W. Reder, "Migration, Location and Remuneration of Medical Personnel: Physicians and Dentists," The Review of Economics and Statistics, Vol L, No. 3, August 1968, pp. 332-347.

Brown, M.A., A. Benham, and L. Benham, "The Introduction of Medicare in Canada and Windfall Gains to Physicians," unpublished, 1976.

Davis, Karen and Roger Reynolds, "The Impact of Medicare and Medicaid on Access to Medical Care," in R. Rosett, ed., The Role of Health Insurance in the Health Services Sector, New York: National Bureau of Economic Research, 1976, 00. 391-435.

Dyckman, Zachary Y., A Study of Physicians' Fees, Staff Report, Council on Wage and Price Stability. Washington, D.C.; US GPO, March 1978.

Evans, Robert G., "Supplier-Induced Demand: Some Empirical Evidence and Implications," in Mark Perlman, ed., The Economics of Health and Medical Care, London: Macmillan, 1974, pp. 162-173.

Feldman, Roger, "The Supply and Demand for Physicians' Hospital and Office Visits," Doctoral Dissertation, University of Rochester, Rochester, New York, 1976.

Fuchs, Victor R. and Marcia J. Kramer, "Determinants of Expenditures for Physicians' Services in the United States 1948-68," Washington: National Center for Health Services Research, December 1972.

May, J. Joel, "Utilization of Health Services and the Availability of Resources," in R. Andersen, J. Dravits, and O. Anderson, eds., Equity in Health Services, Cambridge, Mass.: Ballinger, 1975, pp. 131-150.

Newhouse, Joseph P., "A Model of Physician Pricing," The Southern Economic Journal, 37, No. 2 (October 1970), pp. 174-183.

Newhouse, Joseph, and Charles E. Phelps, "New Estimates of Price and Income Elasticities of Medical Care Services," in R. Rosett, ed., The Role of Health Insurance in the Health Services Sector, New York: National Bureau of Economic Research, 1976, pp. 261-320.

Pauly, Mark, "Is Medical Care Different?" Paper presented at FTC Conference, Competition in the Health Care Sector, June 1-2, 1977.

Redisch, Michael, Jon Gabel, and Martha Blaxall, "Physician Pricing, Costs and Income," Health Care Financing Administration, HEW, Prepared for Western Economic Association Meeting, Anaheim, California, June 20, 1977.

Reinhardt, Uwe E., "Physician Productivity and the Demand for Health Manpower," Cambridge, Mass.: Ballinger, 1975.

Satterthwaite, Mark A., "The Effect of Increased Supply on Equilibrium Price: A Theory for the Strange Case of Physicians' Services," Northwestern University, Center for Health Services and Policy Research, Working Paper No. 6, November 1977.

Sloan, Frank A., "Economic Models of Physician Supply," unpublished Doctoral Dissertation, Harvard University, 1968.

Sloan, Frank A., "Physician Supply Behavior in the Short Run," *Industrial and Labor Relations Review*, Vol. 28, No. 4, July 1975, pp. 549-569.

Sloan, Frank A., "Physician Fee Inflation: Evidence from the Late 1960s," in Richard N. Rosett ed., *The Role of Health Insurance in the Health Services Sector*, National Bureau of Economic Research, New York, 1976.

Sloan, Frank A., "Access to Medical Care and the Local Supply of Physicians," forthcoming, *Medical Care*, April 1977.

Sloan, Frank, and Roger Feldman, "Monopolistic Elements in the Market for Physicians' Services," Paper presented at FTC Conference, Washington, D.C., June 1-2, 1977.

Steinwald, Bruce, and Frank A. Sloan, "Determinations of Physicians' Fees," *The Journal of Business*, 47, No. 4 (October 1974), pp. 493-511.

Cost Effective Clinical Decision Making *by Duncan Neuhauser*[*]

INTRODUCTION

Cost effective clinical decision making (CECDM) attempts to systematically maximize the benefits of medical care given limited resources. It differs from traditional clinical decision making as follows. Using the traditional approach the physician considers each patient one at a time and undertakes to do all that is possible for this patient. There is no assumption of scarcity, under the motto "there is nothing too good for my patient." Cost effective clinical decision making assumes scarcity. The physician's time, a hospital bed, a unit of blood used for one patient is not available for another patient. The objective for the physician is to use these limited resources to maximize the benefits of medical care to a defined population. It makes explicit the blunt idea that my inexpensive death will not consume the medical resources that might be used to save several other lives.

THE ANALYTIC TECHNIQUES OF CECDM

CECDM brings with it a collection of analytic, numerical techniques for making decisions in the absence of complete information. These techniques come from statistics, epidemiology, economics, management, and a branch of applied mathematics known as decision analysis. It is based on the recognition that clinical decisions must be made in the fact of incomplete information and uncertainty. Clinical decisions must be made now. They cannot wait until all the research answers are in.

CECDM leads to the following kind of questions. what is the probability that this patient will have diseases A, B, C, D? If a test is ordered, what is the probability of finding a true or false positive, a true or false negative? If a positive is found, what further testing is required? How does this new information change the probabilities of illness? If a disease is found, what treatment follows, with what magnitude of benefits? How much does each one of these steps cost? Is this the best use of these costly resources?

Here is an example. As all physicians know, and more laymen should realize, all clinical decisions are in reality vastly complex. Therefore, any simple example is misleading. The question is should a

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Table I—Empirical Findings Related to the Physician Induced Demand and Target Income Hypotheses

1. Physician fees are higher where physician density is greater

Literature	How Tested	Results
Steinwald and Sloan (1974)	Econometric analysis of AMA fee data at individual physician level.	Results not consistent with finding that fees are higher where physician density is greater, except for certain specialties.
Sloan (1976)	Econometric analysis of AMA fee data aggregated to the state level.	Results not consistent with this finding.
Dyckman (1978)	Econometric analysis of HIAA fee data for 124 metropolitan areas.	Results not necessarily consistent with this finding. When fees adjusted for cost of living differences, positive relationship between statistically insignificant. In some cases, relationship becomes negative.
Newhouse (1970)	Econometric analysis of physician fees in 18 SMSAs in 1966.	Results consistent with this finding.
Newhouse and Phelps (1974, 1976)	Econometric analysis of household data from CHAS survey.	Results consistent with this finding. However, authors do not interpret their results as indicating support for physician-induced demand and target-income hypotheses.

Table I—*Continued*

1. (continued)

Literature	How Tested	Results
Redisch, Gabel, and Blaxall (1977)	Cross tabs and reduced form regressions using HCFA survey data.	Results consistent with this finding. Fee variables examined include follow up office and hospital visits; also gross income per encounter.

2. Physician hours of work are lower where physician density is greater

Literature	How Tested	Results
Sloan (1975)	Econometric analysis of Public Use Sample of 1960 and 1970 Census. Supply equations are estimated both for weeks and hours worked.	Results consistent with finding that hours of work are lower where physician density is greater. Result stronger for weeks equation than for hours equation.
Redisch, Gabel, and Blaxall (1977)	Cross tabs and reduced form regressions using HCFA survey data.	Results consistent with this finding. Hours variable is total weekly patient care hours.

Table I—*Continued*

3. Per capita utilization of medical services tends to be higher where physician density is higher

Literature	How Tested	Results
Fuchs and Kramer (1972)	Econometric analysis of 1966 data for states.	Results consistent with finding that per capita utilization is higher where physician density is greater. Examined utilization per patient and quantity produced per physician.
May (1975)	Econometric analysis of household data for 1970.	Results consistent with this finding. Obtained much lower elasticities than FK.
Newhouse and Phelps (1976)	Econometric analysis of household data using CHAS survey.	Results consistent with this finding. Obtained much lower elasticities than FK.
Davis and Reynolds (1976)	Econometric analysis of Medicare and Medicaid data.	Results consistent with this finding. No measures of money or time price were included.

Table I—*Continued*

4. Physician net income tends to be lower where physician density is greater

Literature	How Tested	Results
Redisch, Gabel and Blaxall (1977)	Cross tabs and econometric analysis of HCCA survey data.	Results not consistent with this finding. RGB find no significant relationship between net incomes and physician density.
Brown, Benham and Benham (mimeo)	Econometric analysis of pooled cross section-time series data for Canada.	Results consistent with this finding. Paper assesses effects of Medicare (Canadian) on physician earnings.
Sloan (1968)	Estimates 7 equation model of physician location using state data.	Results consistent with this finding.
Benham, Maurizi, and Reder (1968)	Econometric analysis of state data for various years.	Results consistent with this finding. Model not as well specified as in previous two studies above.

physician look for colon cancer using an occult blood test for his non-symptomatic patients over the age of 50? The physician assumes that the first time he looks there will be ten cancers in a thousand patients examined. This may be based on epidemiological data from another population modified by his judgement about the unique characteristics of his patient population. The test costs fifty cents. This test will find 80% of true positives (that is 8 of the 10 true cancers) and will produce 90 false positives per 1000 patients. Further testing at $200 per patient is required to separate true positives from false positives. He does not consider the costs of surgery because he reasons that the cancer will be found sooner or later resulting in surgery in any case. He is concerned with the additional costs and the additional benefits. He assumes finding an early colon cancer this way will prolong life by 4 years on the average based on his analysis of the National Cancer Institute's survival curves for symptomatic and asymptomatic cancer. The test's accuracy is shown in Table I which compares whether the test indicates cancer or not and the true situation.

Table I—Occult Blood Test Results for 1,000 Patients

	The True Situation Is		
The Test Indicates	No Cancer	Cancer	Total
No Cancer	900	2	902
Cancer	90	8	98
Total	990	10	1000

The numbers in this two by two talk can be used as the basis of a decision flow diagram, as shown in Figure 1. For each branch of the decision "tree", costs and benefits can be assigned. The costs for 1,000 patients would be:

$$(0.50)\ (1000) + (\$200)\ (90 + 8) = \$20,100 \text{ total costs}$$

Thus, $20,100/1000 = $20.10 average cost per patient.

The benefits are the number of years of life saved:

(8 cancers) (4 years of life saved per case) = 32 total years of life saved.

The cost per year of life saved is:

$$\frac{\$20,100}{32} = \$628 \text{ cost per year of life saved.}$$

It is likely that the physician would conclude that this is a cost-effective undertaking. If he were really interested in the question he could consider the benefits (if any) of finding rectal polyps and how to combine and sequence the several possible tests for looking for colon cancer and how often to retest the same patient. In fact this problem could easily consume a lifetime of research. But the physician cannot wait for the perfect answer from perfect research. He is going to have to decide to test or not to test before his next patient comes in five minutes from now.

CECDM AND ISSUES IN HEALTH CARE

Here and some of the issues CECDM uncovers:

1. Measuring benefits: In the traditional approach all that had to be known was, for this patient is treatment X better than treatment Y. CECDM implies this information is not enough. One has to measure the size of the benefit so as to decide whether to apply treatment X to patient A or treatment Z to patient B. This requires measuring the magnitude of benefit (for example, years of life saved) and relating the costs to these benefits (cost per year of life saved).

2. In spite of what some critics of medicine say, unnecessary treatment is very rare in medicine; that is, giving a treatment with an expected zero or negative benefit. What is very common in medicine is a treatment with a small expected benefit and a large cost. One is quickly confronted with the very difficult dilemma of how much one is willing to spend to save one year of life. Since the government and private insurance companies are paying so many of the bills they may feel they have a right to be concerned with this.

3. A lot of medical decisions can go one way or the other, depending on the patient's preferences. Some treatments like kidney dialysis provide more life at lower quality. Some treatments improve the quality of life at the price of risking a shorter life (surgery to improve mobility for an elederly arthritic might be an example). These decisions require trading off quantity versus quality of life. No one answer will be right for all people. This implies that either the patient must make the decision or the physician must know that patient's preferences well enough to make that decision on behalf of the patient.

CONCLUSION

CECDC may simply be making explicit what doctors have been doing implicitly all along. Perhaps doctors realize they must divide their time along their panel of patients. When a medical student examines his first patient this may take six hours. Then this student goes to a clinic and has to examine 6 patients in 4 hours. In doing so he has made the transition to CECDM, at least implicitly. CECDM is being taught in some medical schools including Harvard and Tufts, and more articles about it are appearing in such places as the New England Journal of Medicine.

CECDM is attracting attention for several reasons. The problem of high medical care costs has led concerned physicians to think about the cost implications of what they do. This kind of numerical analysis may, for some doctors, allow them to make better clinical decisions. This may allow medical students to understand why a clinical decision is made rather than simply being told "this is the way we do it here". These analytic techniques provide a way to model sequential clinical steps of testing and treatment in such a way as to develop research priorities.

CECDM may simply be turning into numbers what most doctors have been doing all along, or it may result in a revolution in clinical medicine, education and research. No doubt its real impact will be somewhere in between. It is a developing area that is well worth watching.

References

Bunker, John B., B. Barnes, and F. Mosteller. Costs, Risks and Benefits of Surgery. New York: Oxford University Press, 1977.

McNeil, Barbara J., Emmett Keller, and S. James Adelstein, "Primer on Certain Elements of Medical Decision Making," The New England Journal of Medicine, 293, No. 5 (July 31, 1975): 211-215.

McNeil, Barbara, et al., "Cost Effectiveness in Hypertensive Renovascular Disease," The New England Journal of Medicine, 293, No. 5 (July 31, 1975): 216-221.

McNeil, Barbara and S. James Adelstein, "Value of Case Finding in Hypertensive Renovascular Disease," The New England Journal of Medicine 293, No. 5 (July 31, 1975): 221-225.

Neuhauser, Duncan and Ann M. Lewicki, "What Do We Gain From The Sixth Stool Guaiac?", The New England Journal of Medicine, 293, No. 5 (July 31, 1975): 226-228.

Parker, Stephen G. and Jerome P. Kassirer, "Therapeutic Decision Making: A Cost Benefit Analysis," The New England Journal of Medicine 293, No. 5 (July 31, 1975): 229-234.

Weinstein, Milton and William Stason. Hypertension: A Policy Perspective. Cambridge: Harvard University Press, 1977.

The Effect of Graduate Medical Education on Hospital Expenditures: U.S., 1970 *by Larry Freshnock**

The rapidly rising cost of medical care in the U.S. has generated intense interest in factors influencing expenditures in the health sector. In certain respects, the controversy surrounding the health care cost "crisis" is somewhat paradoxical. On one hand, consumers are demanding that costs come under control; on the other, there is a strong belief that access should be increased, quality improved, and the most technologically-advanced medical care should be made available to every American. One factor related to both demands is graduate medical education. The quality of medical care is a direct function of the quality of physician training. However, the costs of medical education are directly linked to unit costs in the health care sector. The purpose of this study is to examine the relationship between graduate medical education and health care costs, specifically those of U.S. hospitals, in an effort to better understand the complex interactions between medical education, costs, and quality of care delivered.

Because hospitals account for the single largest component of increased health care costs (Worthington, 1975), much research has been directed at gaining an understanding of the varied factors underlying hospital expenditures. Studies have examined a number of theories proposed to account for a rate of hospital cost inflation that since 1950 has been twice that for other health services (Worthington, 1975). Econometric techniques have been applied repeatedly to disparate bodies of hospital data in an attempt to determine methods of slowing the cost spiral (Lave and Lave, 1970; Berry, 1970; Werner, 1977 among others). However, problems associated with the application of economic theory to health care in general and hospital operation in particular have as yet disallowed any firm conclusions.

A central difficulty in hospital cost analysis concerns the large differences in the severity and type of cases handled by hospitals. Clearly, costs per inpatient day in a hospital specializing in open heart surgery will exceed those for a hospital primarily treating more general cases. The problem is further compounded by the fact that the same generic case treated in two hospitals may involve "quality" differences. For example, one hospital may maintain special care units for certain cases such as cardiac surgery, while another may treat cardiac patients in general care facilities.

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Concern with the case-mix problem has led several analysts to include proxies for this variable in hospital cost equations. Lave and Lave (1970) used hospital size, location, and teaching status as measures of case-mix differences. Davis (1973) included size, plant assets per bed, teaching status, and personnel composition as proxies to control for case-mix differences. In contrast, Salkever (1972) employed a different strategy and used average household size in the hospital service area as a demand factor related to variation in case-mix.

Results of studies employing teaching status as a case-mix proxy have shown that teaching programs increase hospital costs. While these studies have reported positive effects of medical education variables, they have not interpreted the coefficients as influences of education, per se. For example, Lave and Lave (1970) reported positive coefficients of dummy variables for teaching status and advanced teaching status included in their cost function. They concluded (1970:328) that "Teaching programs tend to raise average costs. Hospitals with extensive teaching programs have the newest equipment." This implies that it was not the presence of the teaching program itself, but rather the associated technical equipment that was responsible for the positive cost effect. Berry (1970) applied factor analysis to forty variables related to product mix. Four measures reflecting various aspects of graduate medical education defined the first factor extracted, but effects on costs were again interpreted in terms of case-mix differences. Ingbar and Taylor (1968) also employed a factor analytic framework to assess the influence of the average number of residents and interns on hospital expenditures. The education variables were found to be related to a factor the authors defined as "size-volume" and therefore were interpreted as size and volume proxies.

In a more recent study, Werner (1977) included the ratio of hospital physicians and residents to total personnel in both structural and reduced form cost equations and reported positive, significant effects on costs per inpatient day. Similarly, Huang (1975:55) examined the cost impact of intern and teaching programs and concluded, "that patients admitted to hospitals with internship programs or with teaching programs stay significantly longer and receive more services than patients in hospitals without such programs."

In interpreting this result, Huang (1975:56) pointed to a major problem of causal influence in his and similar equations, "Hospitals with teaching or internship programs are hospitals with more comprehensive facilities which admit more serious cases." Thus, the three variables, education, facilities, and case-mix are statistically confounded and usually have not been separated in empirical studies. In order to examine net education effects, this separation is essential.

"The question of how much the variations in the cost per patient day are explained by differences in medical education programs cannot be answered without considering the effect of the scope of services on unit cost," (Ro, 1966:53).

In sum, the empirical studies discussed above indicate that graduate medical education variables are usually included in hospital cost equations only as case-mix proxies and estimated cost influences are interpreted as such. Therefore, estimated positive effects of medical education measures have been discussed not in terms of education itself but in terms of related variables. The purpose of this analysis is to disentangle education and service-mix influences in order to examine the net effect of graduate medical education on hospital expenditures.

A related problem of isolating the net effects of graduate medical education on hospital expenditures involves the conceptualization and measurement of hospital output. Similar difficulties related to the measurement of physician output have been discussed at length elsewhere (see Reder, 1969 for an extended discussion) and will not be reviewed here. In the case of the hospital, these difficulties are compounded further by the fact that the hospital is a multi-product firm, producing medical research and education as well as patient care. However, education and research differ markedly from direct patient care because their associated benefits and costs are not directly apparent to either the "consumer" or third party payer in a conventional sense. Rather, research and education costs are embedded in the general expenditure structure of the hospital and are passed on to the patient in the form of increased costs for routine and ancillary services if exogenous subsidies are not available. Thus, the patient pays for products not directly consumed.

Clearly, this view is somewhat abstract; in actuality, hospital research and education may improve the "quality" of care received by certain patients, especially those with complex medical problems. In general, however, the majority of patients in teaching hospitals pay a hidden "embedded" cost of medical education programs and receive no direct service improvement. Therefore, graduate medical education programs would be expected to increase average patient day costs in teaching hospitals.

In contrast to the "embedded costs" hypothesis outlined above, there is a theoretical basis for believing that graduate medical education programs may reduce average hospital costs after controlling for case-mix and product quality differences (Ro, 1966). From a production function viewpoint, resident time, which is much less expensive than staff physician time, may be substituted extensively for staff physician hours in teaching hospitals. For example, Bane (1959) reported that hospital residents, on average, spent three quarters of their duty time providing direct patient services and the remainder primarily on research and education. By employing resident services, teaching hospitals may be able to deliver services comparable in quantity and quality to those of non-teaching hospitals, but at lower average cost. However, the time of teaching physicians associated with the graduate program is diverted from patient care to educational, research, or administrative tasks. If the costs of time spent by teaching physicians in non-patient oriented tasks are passed on to patients, teaching programs would be expected to increase average costs per inpatient day, all else equal.

Therefore, the "substitution" hypothesis predicts that the net effect of the number of graduate residents employed by teaching hospitals will be to decrease costs, while the net influence of the number of hospital-based physicians involved with teaching programs will be to increase costs per inpatient day. The number of residents is expected to covary positively with staff physicians, controlling for utilization, size, service mix, and demand, because increased numbers of students require an increased staff of teaching and administrative physicians. This relation should cause an indirect positive effect of residents on costs through staff physicians, in counterbalance to the direct negative influence. The substitution model is diagrammed in Figure 1(a).

Positive cost effects of teaching programs reported by previous studies lead to the expectation that the indirect positive effect of residents may outweigh the direct negative effect, causing a net positive influence. However, previous analyses have failed to include an independent case-mix proxy and have not focused on net cost effects of education. Therefore, their results relating graduate medical education variables to hospital costs are suspect.

In sum, the embedded costs hypothesis is relatively undifferentiated. It states simply that the costs of graduate medical education programs are passed on to patients in teaching hospitals and should therefore increase costs per patient day. The substitution hypothesis more specifically predicts that residents should directly reduce costs and should indirectly, through increases in staff physicians, increase costs. The total cost influence is unspecified, but on the basis of earlier, less-refined studies is predicted to be positive.

THE MODEL

The average cost per inpatient day is assumed to be determined by the following function,

$$\text{Cost} = F(U, S, P, X) \qquad (1)$$

where U is the utilization rate, S is a measure of hospital size, P is the product mix, and X is medical education.

Figure 1—Costs of Looking for Colon Cancer for 1,000 Patients

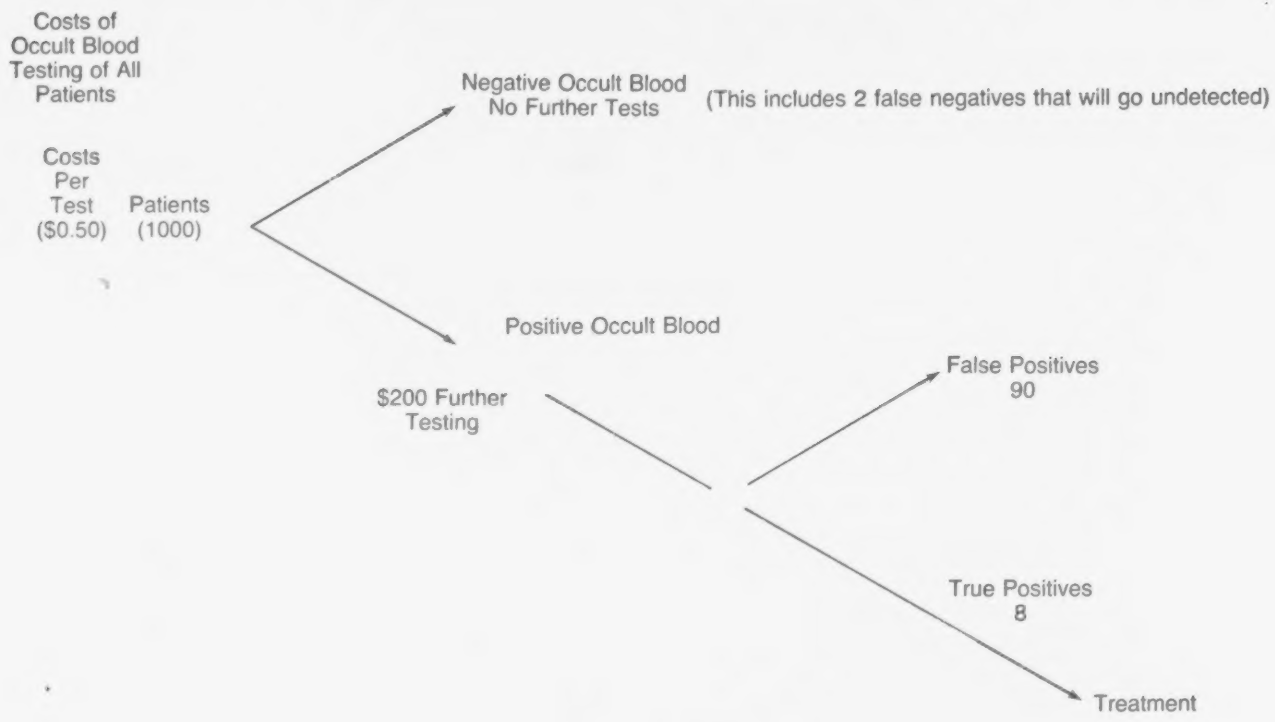
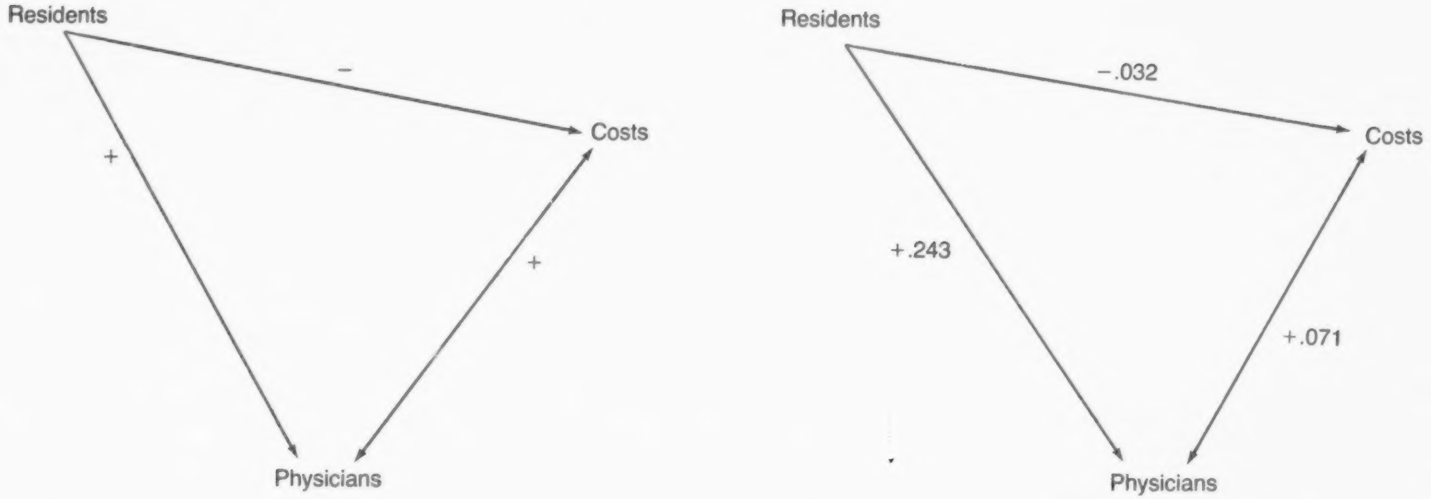

Costs of Occult Blood Testing of All Patients
Costs Per Test ($0.50)
Patients (1000)
Negative Occult Blood No Further Tests
(This includes 2 false negatives that will go undetected)
Positive Occult Blood
$200 Further Testing
False Positives 90
True Positives 8
Treatment

Figure 1—The Substitution Theory of Graduate Medical Education Effects on Unit Hospital Costs


Residents
−
Costs
+
+
Physicians
Residents
−.032
Costs
+.243
+.071
Physicians

(a) Hypothesized relations among hospital residents, physicians, and costs

(b) Estimated models of graduate medical education effects on hospital costs per inpatient day

Both utilization and size are hospital characteristics linked to costs in earlier studies (Lave and Lave, 1970; Davis, 1973; Huang, 1975; Werner, 1977). In addition, a number of analysts have emphasized the importance of controlling for the patient care product mix (Lave, 1966; Feldstein and Schuttinga, 1977). A number of proxies have been used by these studies as case-mix controls. Given the importance of this variable, both demographic demand factors and hospital production capability (available services) are included in the cost equation estimated below. The actual variables used to approximate the theoretical concepts in equation (1) are now defined.

VARIABLES

Cost = total expenditures in 1974/inpatient days in 1974.
Utilization = 1974 inpatient days/available beds* 365.
Size = 1974 beds/number of general hospitals.
Service Mix = total general hospital services available, 1974 (AHA categorization.
Income = per capita income, 1972.
Age = percent of county population aged 65+.
Births = number of births 1969-1973.
Deaths = number of deaths 1969-1973.
Education = median education (years).
Racial composition = percent black population, 1970.
Residents = number of residents affiliated with general hospitals, 1974.
Physicians = number of physicians affiliated with general hospitals, 1974.

DATA

Data used in this study are derived from the HEW's Area Resource File (June, 1977). Variables are measured at the level of U.S. counties. Equations based on aggregate information should be interpreted cautiously because of possible problems associated with the ecological fallacy (Robinson, 1950). Interpreting aggregate level coefficients as individual effects may be inappropriate (Hannan and Burstein, 1974) and we explicitly avoid such interpretations. Rather, estimated parameters will be discussed as influences on county hospital expenditures.

One of the problems of using aggregate data is the loss of intra-unit heterogeneity in the variables examined. However, in the case of hospital costs, some aggregation is actually desirable because case-mix variability among individual hospitals is reduced and thus controlled by aggregation. We believe that county-level aggregation in conjunction with explicit inclusion of case-mix proxies in the model sharply reduces the confounding effects of product differences in this analysis.

As seen in Table I, 2544 of 3078 possible counties are included in the data set. This reduction is caused by the failure of many hospitals to report expenditures. Because independent variables are measured at the county level, any county with at least one hospital failing to report total 1974 costs was deleted from the analysis. To the extent that failure to report expenditures varies with exogenous variables, estimated coefficients will be biased and should, therefore, only be applied to counties included in the sample.

FINDINGS

Means, standard deviations, and regression coefficients are presented in Table I. The reader should recall that these statistics are based on counties and, therefore, cannot be compared directly with individual hospital information.

The average cost per inpatient day for counties included in our sample is $92.80. The occupancy rate is slightly greater than 65 percent; average bed size is approximately 103 beds. For residents and physicians, the small means relative to standard deviations indicate that many rural counties have few or no hospital-based residents and physicians, while more urban counties evidence high values of these variables. The population demand variables, per capita income, percent aged 65+, births, deaths, median education, and percent black evidence expected distributions.

Two forms of the regression coefficient are presented. The unstandardized coefficient measures the unit change in hospital expenditures associated with a one unit change in an independent variable. For example, the service mix coefficient indicates that increasing the number of hospital services by one increases the cost per inpatient day by $ .102 or 10.2 cents. The standardized coefficient measures the relative importance of each independent variable. These coefficients show, therefore, that the most important determinants of county hospital expenditures are the occupancy rate, the present population aged 65+, and per capita income.

In general, the estimated cost function is similar to those reported by previous studies. The higher the occupancy rate, the lower the average cost per day. Service mix, an indicator of case-mix and quality of care, increases costs as expected. Average size which was included as a returns to scale indicator shows a positive significant coefficient, suggesting negative returns to scale in the hospital sector. However, hospital size has often been included in cost function as a case-mix proxy under the assumption that larger hospitals handle more complex and, therefore, more expensive medical cases. If, in fact, the size variable reflects variation in case-mix not captured by other variables in the equation, a positive effect would be expected. Per capita income, education, and racial composition were included as demand factors; coefficients are as expected, indicating that in areas where income and education are high and the percentage of blacks low, the cost of hospital care is high. As expected, the higher the number of births and deaths, the higher the average cost per inpatient day as these variables indicate a more service-intensive case mix. These coefficients will not be discussed in greater detail because our principal theoretical interest lies in the pattern of coefficients for physicians and residents, the independent variables related to graduate medical education.

The substitution hypotheses predicted a negative net effect of residents and a positive net influence of hospital-based physicians on total hospital expenditures. A positive net relationship between residents and physicians was also expected. As seen in Table I, the first two hypotheses are supported; each residence decreases average costs by 3.2 cents while one physician increases expenditures by 7.1 cents. To test the proposed relationship between physicians and residents, the number of general hospital physicians was regressed on residents, inpatient days, outpatient visits, service mix, average size, deaths, births, percent aged 65+, percent black, and education. As before, these latter five variables were included as demand proxies. The estimated equation was:

$$\text{Physicians} = 10.41 + \underset{(697.4)}{.243\ \text{Residents}} + \underset{(1014)}{.139\ \text{Outpatient visits}} +$$

$$\underset{(25.0)}{.037\ \text{Inpatient days}} - \underset{(0.93)}{.028\ \text{Services}} - \underset{(23.56)}{.023\ \text{Average Size}} +$$

$$\underset{(915.4)}{3.30\ \text{Deaths}} - \underset{(265.9)}{1.35\ \text{Births}} - \underset{(20.66)}{38.5\ \%\ 65} - \underset{(13.61)}{111.66\ \%\ \text{black}}$$

$$\underset{(1.87)}{-.033\ \text{Education}} \qquad R^2 = .895 \qquad \text{(t-values in parentheses)}$$

The hypothesis of a positive relationship between full-time staff physicians and residents is strongly supported. The regression coefficient indicates that an increase of four residents is associated with an increase of approximately one physician.

Combining results, the estimated substitution model of graduate medical education effects on hospital costs per inpatient day is presented in Figure 1(b).

The direct cost effect of residents is -3.2 cents, while the indirect effect through physicians is (.243)(7.1)= +1.7 cents, for a total net effect of -3.2 + 1.7 = -1.5 cents. The counties in this sample reported approximately 82,000 inpatient days and 31,000 residents in 1974. Given the estimated cost coefficients, this indicates a total savings in hospital costs attributable to graduate medical education of greater than 38 million dollars in 1974.

In sum, the estimated cost function shows that after controlling for occupancy, size, service mix, and demand, the net influence of residents on hospital expenditures per inpatient day is negative, in accordance with the substitution theory presented earlier.

SUMMARY

Previous empirical studies have (1) included medical education variables in hospital cost functions as proxies for other hospital characteristics, (2) interpreted resulting positive coefficients in terms unrelated to education itself, and (3) have not, therefore, examined the net cost influences of graduate medical education programs.

Based on the economic theory of input substitution, we hypothesized that residents should reduce costs directly but increase expenditures indirectly by diverting physician time from patient care to teaching and research.

These hypotheses were tested using 1974 data for U.S. counties and were strongly supported. A computation of the total effect showed that the direct negative influence outweighed the indirect positive effect, resulting in a total negative net effect of medical residency on hospital costs per inpatient day. We believe this result does not contradict positive cost effects reported by previous studies because these analyses were not interested in education, per se, and did not examine residency effects net of service mix, care quality, and demand factors.

Our results suggest that if residency programs are limited by exogenous policy, maintenance of comparable care may increase average hospital expenditures. Clearly, however, findings reported here are exploratory and greatly in need of further refinement. Future research should disaggregate residencies by specialty and costs by diagnosis to examine in finer detail the net effects of graduate medical residents on the quality and cost of hospital care in the U.S.

References

Bane, Frank et al. Physicians for a Growing America, Report of the Surgeon General's Consultant Group on Medical Education, 1959.

Berry, Ralph E. "Product Heterogeneity and Hospital Cost Analysis", Inquiry 7, (March 1970): 67-75.

Davis, Karen "Theories of Hospital Inflation: Some Empirical Evidence", Journal of Human Resources, Vol. 8, (Spring 1973): 181-201.

Feldstein, Martin S. and Schuttinga, James "Hospital Costs in Massachusetts: A Methodological Study", Inquiry 14, (March 1977): 22-31.

Hannan, M. and L. Burstein. "Estimation from Grouped Observations", American Sociological Review 39, (1975): 374-392.

Huang, Lien-fu. An Analysis of the Effects of Demand and Supply Factors on the Utilization of Health Services in Short-Stay General Hospitals. R. R. Nathan: Washington, D. C. Sept., 1975.

Lave, Judith R. "A Review of the Methods Used to Study Hospital Costs", Inquiry 3 (May 1966): 57-81.

Lave, Judith R. and Lester B. Lave. "Hospital Cost Functions," The American Economic Review, 60 (June, 1970): 379-395.

Reder, M. W. "Some Problems in the Measurement of Productivity in the Medical Care Industry," in V. Fuchs (ed.) Production and Productivity in the Service Industry, New York: National Bureau of Economic Research, 1969.

Ro, Kong Kyun. A Statistical Study of Factors Affecting the Unit Cost of Short-Term Hospital Care, Unpublished Ph.D. dissertation, Department of Economics, Yale University, New Haven, Connecticut, 1966.

Robinson, W. "Ecological Correlations and the Behavior of Individuals", American Sociological Review, 15 (1950): 351-357.

Salkever, D. S. "A Microeconomic Study of Hospital Cost Inflation", Journal of Political Economy 80 (November - December, 1972): 1144-1166.

Werner, Jack L. The Effects of Insurance on Hospital Utilization and Cost: A Simultaneous Equation Model. Unpublished Ph.D. dissertation, Department of Economics, Pennsylvania State University, University Park, Pennsylvania.

Worthington, N. L. "National Health Expenditures, 1929-74", Social Security Bulletin, 38 (February 1975): 3-20.

Hospital Reimbursement and Utilization Incentives: A Maryland Experiment *by Harold A. Cohen and John S. Cook**

INTRODUCTION

The purposes of this paper are to briefly describe the origin and responsibilities of Maryland's Health Services Cost Review Commission (HSCRC), to discuss its handling of the matter of equity in hospital charges, and to discuss the relationship between rate review and utilization review. A thesis of this paper is that the most important aspect of hospital rate review is the incentives it contains relative to the practice of medicine.

The position is presented that hospital reimbursement design has consistently militated against effective utilization review. This has been aggravated by the introduction of Medicare's routine cost screens in 1975 and by prospective unit rate setting which certain states (notably Maryland and Connecticut) began around the same time. Next, an experimental rate design being applied in Maryland -- the express purpose of which is to encourage effective utilization review -- is described.

It is best to clearly state the writers' belief that the practice of medicine is influenced by the way in which medical services are paid. The idea expressed in the preamble to the Social Security Act of 1965 that Medicare (and Medicaid) will not influence the practice of medicine is erroneous. One cannot spend billions of dollars in a market without influencing the shape of that market.

DEVELOPMENT OF HSCRC

The HSCRC, a utility-type commission, was created by the Maryland General Assembly to deal with three perceived problems in the state's hospital system. These were the lack of equity in the payment system, long term threats to the solvency of inner-city hospitals, and public concern for the rising cost of hospital care. To a great extent, all these problems were related to the way in which hospitals were paid for the provision of health care.

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Delegate Rosalie Abrams had been introducing legislation since 1967 to create just such a utility-type commission for setting hospital rates. In 1970 the Maryland Hospital Association (MHA) was reorganized into an organization of trustees; and the Commissioner of Insurance rejected a new contract which had been negotiated by MHA and Maryland Blue Cross (BX) calling for BX to make a substantial contribution toward charity costs. In 1971, the now state Senator Rosalie Abrams, joined by state Senator Harry McGuirk, was able, with strong support from Governor Marvin Mandel and the MHA, to have a utility-type Commission created. There was strong opposition from organized medicine. It was reported that the state medical society opposed the bill, in part, on the grounds that hospitals should not budget because budgeting reduces quality of care. This, despite the fact that the average hospital in Maryland spent well over ten million dollars a year. BX also opposed the creation of the HSCRC as it posed a strong threat to one of its major competitive advantages.[1]

The non-contribution of BX to charity and bad debt care took on greater importance in 1966 when Medicare and Medicaid were enacted — they also did not recognize any costs of treating non-paying patients. At first, Medicare and Medicaid helped relieve the problem by paying for people who were previously bad debts. Maryland's Medical program was quick to introduce a medical indigency program which was fairly liberal at its inception. As time went on, those indigency levels became insufficient and the old bad debt experience began to return. Only now, a much narrower base of charge paying patients existed as a source of revenue to cover those costs.[2]

The non-recognition of charity and bad debt costs coupled with the inadequate Medicaid definition of medical indigency led to inequities in the payment system and to a threat to the long run solvency of inner-city hospitals without massive endowments. At the same time, the payment of actual costs for salaries, supplies, depreciation, interest, etc., gave most hospitals no reward for being efficient and no financial reason for denying requests from either their employees or their medical staffs.

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[1] While organized medicine in Maryland remains opposed to the Commission especially regarding its attempts to extend jurisdiction to the hospital based practice of radiology and pathology and to making the various health planning agencies give a greater priority to cost containment, Maryland Blue Cross has become very supportive in several ways. These include lobbying support for Commission sponsored legislation, financial support for rate review and auditing, and most importantly, the presentation of original testimony in rate hearings. This testimony is generated from a superb data base covering charges to Blue Cross patients by hospital and by diagnosis.

[2] Senators Abrams and McGuirk, with support from Governor Blair Lee have prefiled legislation for 1978 to cause the first increase in Maryland's medical indigency level. That increase is well below the rise of the cost of living since 1967. Funds for this expansion are, in large part, available because Medicaid payments to hospitals rose less than anticipated in the 1977 budget.

Given this background, it is not surprising that the MHA would support an organization which must "keep itself informed as to whether the financial resources of each institution are sufficient to meet its financial requirements and to concern itself with solutions when resources are inadequate, and which is charged with approving rates that are equitable among purchasers or classes of purchasers while they maintain the solvency of efficient and effective hospitals" (Article 43, Section 568H (a), Annotated Code of Maryland). Given the high and rising costs of hospital care and hospital insurance it is not surprising that the legislature would support a bill establishing a Commission empowered to review hospital budgets and "assure all purchasers of health care hospital services that the total costs of the hospital are reasonably related to the total services offered by the hospital" (Article 43, Section 568H (b) Annotated Code of Maryland).

EQUITY, SOLVENCY AND RATE DESIGN

Because some payors were given discounts for hospital care, inequities existed in the prices charged to different types of hospital patients. What the legislators did not realize was that equity in the payment system and hospital solvency could not be jointly attained unless Medicaid and Medicare were brought into the single payment system. This was not achieved until July 1, 1977. In the meantime, as the hospitals had clearly expected, the Commission opted for solvency when it was in conflict with equity. A temporary and largely arbitrary discount was given Blue Cross (and other insurers meeting a set of criteria) with the total approved budget covered via anticipated cost-based reimbursement for Medicaid and Medicare and charge-based payment from other payors.

The Commission was created in July 1, 1971; however, it did not gain authority to either investigate hospital costs or approve new rates until July 1, 1974. Each hospital was reviewed individually. As individual hospitals were put on Commission approved rates, Blue Cross began paying them on the basis of 94% of Commission approved charges. That took place from February 1975 through June 1977. Medicare and Medicaid continued to pay on the basis of retrospective costs until July, 1977, when they also began paying 94% of the Commission approved charges except that during 1975 and 1976 Medicaid introduced its routine cost screen and paid retrospective costs only up to a particular limit.

In sum, when the Commission reviews hospital budgets and approves rates, it has three areas of responsibility: equity, efficiency, and solvency. Equity among patients classified according to how they pay has been greatly improved. This was achieved in a two step process as described above. First, BX began paying hospitals 94% of charges and on July 1, 1977, Medicaid and Medicare also began paying 94% of charges.[1]

Solvency is satisfied by any rate design which generates a cash flow sufficient to allow the hospital to meet its obligations in a timely fashion. The Commission's definition of full financial requirements is typically more generous than Medicare and Medicaid's definition but less lucrative than that of the American Hospital Association. Although equity was improved July 1, 1977, as long as discounts were given to BX and Medicare-Medicaid, self-paying patients must pay higher prices than others to maintain hospital solvency.

Another question regarding equity was how to treat patients categorized according to the services they consumed. For the most part, the Commission has approved rates which, after spreading charity and bad debt costs among all revenue centers, requires each revenue center to break even. The principal exception to this rule has been clinics. The Commission has subsidized clinics as they provide important access to primary health care in the inner city, much as the Commission subsidizes open enrollment for providing important access to health insurance throughout the state. Some obstetrics (OB) related services are subsidized and some emergency rooms are subsidized via approving rates above costs in other areas.[2]

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[1] The 6% reduction is comprised of two parts: 2% for payment on discharge (1% for payment within 30 days) and 4% for selected underwriting practices, most important of which are open enrollment and group conversion privileges. In addition to Maryland's two Blue Cross Plans, two HMOs receive the 4% discount and one of those receives the full 6% at one hospital. These situations contrast with pre-Commission Medicard and Medicare cost/charges ratios of 84-86% and Blue Cross cost/charges ratios of 86-88%. The Commission does not believe that equity requires equal payment. Savings to the system must be rewarded if they are to be continued in the competitive insurance market.

[2] The total subsidies are as follows: clinics $9,000,000; emergency room $2,000,000; OB and delivery room $4,000,000. Clinic subsidies and emergency room subsidies are overstated due to faults in the Uniform Accounting System and are understated due to the spread of bad debts. The decision to overcharge some patients in order to undercharge others is analogous to a taxing decision (Posner, 1971) and, as such, should properly be made by elected officials.

Table I gives the approved percent of revenues prior to subsidy of the major revenue departments. Because the Commission approves rates for self-responsible patients as well as BX patients, the Commission felt an all inclusive rate per day or per admission would not be equitable. Should a tonsillectomy patient pay the same per day or per stay as an open heart surgery patient? The Commission believes that the answer is no; charges which do not reflect the difference in cost of treating those patients are unduly discriminatory.

In sum, the Commission's response to its concern for equity resulted in cost-based pricing with some modifications and considerably lessened differentials for the third-party payors. This arrangement has no net effect on the hospital's cash flow and has very little influence on the practice of medicine. In fact, the Commission believes hospitals should be neutral with regard to who pays a customer's bills and that the hospital cannot be at risk for its percentage of charge paying vs. discount paying paying patients.[1] Although rates are based on the historical percentage of third party and charge paying patients, rates are adjusted during the following year to reflect the realized percentages. There is little, if any, evidence that more people will choose to bear their children at home because the hospital bill rises to reflect full cost. More likely, the public will be more supportive of the Maryland Comprehensive Health Planning Agency's attempts to consolidate obstetrical services.[2]

INCENTIVES AND EFFICIENCY REVIEW

Both the way the Commission reviews for efficiency and several examples of how that review has been applied are available in the literature (see, for example, Cohen 1978). Our purpose here is to demonstrate that the system rewards excessive use just as the Medicare reasonableness criteria reward excessive use: Classes are offered in ways, other than increased efficiency, to reduce a hospital's routine costs per day as calculated by Medicare. Only two of those concern us here. The first is to perform more ancillary and outpatient

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[1] Currently the hospital is at risk for its approved percentage of non-payors. The Commission has proposed a regulation which gives an operational definition to charity care. The hospital would be at risk for bad debts but not for charity care.

[2] Some physicians, notably some obstetricians, pediatricians and emergency room physicians, have argued against the steep rises in the rates the hospitals charge for those services. The authors have often heard those services compared to department store "loss leaders" — feeders to the rest of the hospital as if someone comes in for a delivery and decided to have their adenoids removed on a package deal. We do not accept this argument as valid or socially desirable.

Table I—Means, Standard Deviations, and Regression Coefficients for Variables Included in a Model of Hospital Costs per Inpatient Day, 1974

Variable	Mean	Standard Deviation	Unstandardized Coefficient	Standardized Coefficient
Cost per Day	92.80	30.20	--	--
Occupancy Rate	65.37	14.26	-.659	-.309
Average Size	102.90	90.96	.026	.078
Service Mix	24.18	43.26	.102	.147
Residents	12.50	80.06	-.032	-.084
Physicians	8.74	47.01	.071	.110
Per Capita Inc. (1000)	30.32	6.27	.873	.181
% Aged 65+	11.84	3.91	-2.070	-.268
Births (1000)	5.04	10.44	.403	.139
Deaths (1000)	2.11	3.81	.380	.048
Education	11.01	1.33	1.020	.045
% Black	5.4	1.82	-1.030	-.062

N = 2544 R^2 = .336 All coeff. sig. at p _ .01

Table I—Sources of Funds (Before Subsidization)

Revenue Centers	Approximate Percentage of Revenue	Revenue Unit
Medical/Surgical	.2781	Medical/Surgical Patient Days
Pediatrics	.0388	Pediatric Patient Days
Obstetrics	.0315	Obstetric Patient Days
ICU	.0395	ICU Patient Days
CCU	.0090	CCU Patient Days
Nursery	.0131	Nursery Patient Days
Emergency Room	.0416	Emergency Room Visits
Clinic	.0533	Clinic Visits
Operating Room (and Recovery Room	.0748	Operating Room Minutes
Labor and Delivery	.0149	Procedures
Anesthesiology	.0164	15 Minute Increments
Blood Bank	.0124	500 CC Units
Laboratory	.1070	CAP 4th Ed. RVU's
Radiology	.0625	HSCRC RVU's (a)
EKG	.0092	1974 California RVU's
EEG	.0023	1974 California RVU's
Inhalation Therapy	.0124	Maryland RVU's
Nuclear Medicine	.0104	HSCRC RVU's (a)
Physical Therapy	.0051	1974 California RVU's
IV Therapy	.0090	(b)
Medical Surgical Supplies	.0225	(b)
Pulmonary Function	.0013	Conn. Hosp. Assoc. RVU's
Cost of Drugs Sold	.0340	(b)
Admissions	.0242	Inpatient Admissions
Other Departments	.0663	Miscellaneous
Other Income	.0104	(c)
Total	1.0000	

(a) Formerly American College of Radiology, 1973 Edition RVU's.
(b) Invoice Cost Plus Approved Markup Plus Approved Overhead.
(c) Endowment Income and Net Income From Non-Patient Care Areas.

services. This will result in more overhead costs being allocated away from the routine inpatient service. Because Medicare has no screen or ancillary or outpatient costs, shifted costs will be paid. The second is simply to have more patient days. Given that a significant proportion of a hospital's costs are fixed within the year, more days, whether medically necessary or not, will reduce average cost as the fixed overhead is spread more thinly.

The incentive to excessive utilization in the Commission's efficiency review system is easy to explain. All cost centers are reviewed for efficiency on the basis of cost per unit. (Examples of units are patient days for dietary services, a weighting of inpatient days and outpatient visits for medical records, relative value units for radiology, minutes for the operating room). Since there are fixed costs associated with all hospital services, in the short run the hospital can reduce the challenged costs or "beat" the screen by increasing production. The Commission has done nothing to remedy this situation; however, we are working on two alternative solutions. One is to develop absolute standards for efficiency at different utilization levels for specific hospitals. The second is to continue to use relative efficiency measures, but adjust every comparison hospital's unit to what they would be at a particular rate of capacity utilization via more general formulas for identifying fixed and variable costs. Both these efforts are being underwritten in large part by the Health Care Financing Administration.[1] In the meantime, over-intensity pays.

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[1] For a simple example of the problem, assume two identical hospitals each with a 40 bed pediatric nursing station. One has an average census of 20 and total direct costs of $328,500. The other has an average census of 35 and total direct cost of $549,325. The direct costs per day are $45 and $43 respectively and so the Commission's method (or any other current review method) would cite the first as less efficient. Yet it is far more likely that the second hospital in the example could reduce its costs without reducing its quality of care. The key question with regard to the second hospital is could the first hospital handle the increase in census from 20 to 35 with an expenditure of less than $220,825; i.e., are their fixed costs more than 10%? Our studies suggest fixed costs are over three times that amount; therefore, the second hospital is more inefficient in the sense that it is more likely to be able to provide its current amount and quality of care at less cost. Yet, most systems will deny resources to the first hospital and not the second.

The above is not meant to imply that resources should be denied the first hospital. The key question with regard to the first hospital is "should it stay open"? That is a planning decision. If the answer is "no," then rates should force them out. If the answer is "yes," then rate setters should not apply pressure the only likely result of which is to reduce quality or lead to pressure on physicians to increase length of stay, provide questionable admissions, or shift patients around for inappropriate reasons.

The efficiency screen is not the only way the Commission's system has encouraged over-utilization. Like Connecticut, we began by prospectively approving unit rates for the services listed in Table 1. In order not to overly interfere with the internal management of hospitals, we approve an average rate per unit for each revenue center listed. Thus, the average room rate on medical/surgical might be $100 and the average room rate in OB might be $110. The hospital is entirely free to charge more for private rooms, rooms with view, etc. as long as the average is as prescribed. If gynecology patients are spread between both floors, the hospital could charge them the same as long as both floors average out to the prescribed rate. Clearly, a hospital might want to charge more for the first half-hour in an OR than for subsequent time and more per minute in the open-heart surgery than in the ear, nose, and throat operating room. Those variations are all at the hospital's discretion.

When the Commission approves a rate for a service, that rate is predicated upon a projection of cost and a projection of volume. If volume in a particular department falls below the projection, the hospital will lose cash flow and also fail to cover approved fixed costs. If volume exceeds the projection during the prospective budget period (one year typically) the hospital stands to gain cash flow and be overcompensated for fixed cost. The Commission, in subsequent inflation adjustments, corrects for these volume variances in that hospitals are expected to increase or decrease only variable costs. If the Commission's fixed and variable cost specification were correct, except for the cash flow implications (an important incentive for expansion) the use of unit rates would be volume neutral financially. While logically correct, in practice it does not work that way. It is much easier to increase expenses on the margin (hire people) than it is to decrease expenses on the margin (fire people). A hospital board, administration, medical staff and other staff would prefer to work in a more stable or expanding hospital.[1]

Several members of Maryland's physician community have argued that the Commission should not be concerned about the quantity of services provided but only with unit prices. Yet the public's concern is with the rising proportion of their incomes going to hospital care. Aggregate hospital expenditures equal unit costs multiplied by number of units. Expenditures per capita can not be controlled without appropriate incentives directed to the number of units. The principal reason why cost per day in Maryland has risen faster than the rate of inflation is increases in "intensity," the industry's term for more ancillary activities per day. There is woefully little evidence that patient outcomes -- health status -- are improving as a result. For example, cost per day in Maryland increased 10.25% in fiscal year 77. Rate increases explain slightly below 7% while "intensification" explains about 3½%.

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[1] The reader may wonder why hospitals do not over-project their volume. That might allow them to escape the efficiency screens discussed above. There are three reasons: 1) the negative impact on cash flow; 2) the possibility that only fixed costs that would have been approved will be repaid through the inflation adjustment; and 3) the formularized nature of volume projections in the prescribed budgeting system. In fact, hospitals tend to underproject ancillary volume and make more random errors in projecting days by major service.

Effective utilization review is extremely unlikely when the reviewers perceive that their effectiveness will cause financial hardship to the hospital. This is especially true when PSRO review is delegated to the particular hospital, as is the case with the Baltimore City PSRO. It should come as no surprise to learn that length of stay in central Maryland rose during 1976 to 8.8 days or that the bed days per 1,000 population rose to 1,149.

INCENTIVES AND RATE DESIGN

Having recognized the need for incentives to cut down on the quantity of care, the Commission has developed a new rate design which attempts to incorporate those incentives. It is important to remember that the amount of money an efficient and effective hospital is allowed to receive must permit it to maintain solvency. In the public-utility literature the approved amount of revenue is referred to as the rate level. The way that revenue is generated is referred to as the rate design or rate structure. Different rate designs include different incentives and the attention to rate design in the public-utility sector has blossomed since it has become fashionable to encourage people to buy less rather than more gas, water and electricity. The rate design currently being applied at several hospitals in Maryland does not reduce the hospital's ability to remain solvent, but rather makes different kinds of behavior profitable. Just as before, a hospital which meets all approved costs and budgeted volumes will break even. Unlike before, a hospital will make money by cutting back rather than extending length of stay, by decreasing rather than increasing their "intensity" for a given case mix, and by shifting surgery from an inpatient to an outpatient basis.

THE GUARANTEED INPATIENT REVENUE PROGRAM (GIR)

The Guaranteed Inpatient Revenue (GIR) Program has been developed by the Maryland Health Services Cost Review Commission to provide hospitals with financial incentives to moderate the increase in the amount of resources used per patient admission in order to slow the rise in the cost of health care. This approach recognizes that the cost of health care is dependent not only on the amounts spent for individual personnel, supplies, and services, but is also dependent on the quantity of tests and examinations ordered for patients and on their average length of stay.

The GIR is applicable to inpatient service only and is being implemented on an experimental basis for a period of not less than one year. Hospitals selected for this program are those with relatively well developed information systems and with the capacity for detailed utilization review. Hospitals participating in this experiment will be provided with normal periodic rate increases as prescribed in the Commission's rate adjustment system.

The first step in the computation of the GIR is to specify the base period. The base period, like the experimental period, varies by hospital but is generally the first six months of the year preceding the experimental period. For the base period the hospital develops certain charge data applicable to live discharges other than newborns. Specifically, the hospital classifies each patient (other than deaths and newborns) served in the base period, according to their discharge diagnosis and whether or not the patient was under age 65. Within each classification the hospital computes the average billed charges. These statistics are referred to as the base period charges.

The hospital adjusts the base period charges to bring them to the level they would have been throughout the experimental period, thereby taking into account all rate adjustments subsequent to the first day of the base period but prior to the last day of the experimental period. The resulting charges are called the adjusted base period charges.

The adjusted base period charges represent the guaranteed average revenue per diagnostic-age classification for each live discharge other than newborns during the period of the experiment. The computation of the GIR for the experimental period is then carried out as follows:

1. For each diagnostic age classification, the adjusted base period charge is recorded along with the number of live discharges.

2. The product of the base period charge and the number of live discharges is then summed over all applicable discharges.

The hospital shall receive a prospective rate adjustment, at the end of the experimental period or as often as monthly during the experimental period if the hospital so chooses, equal to the difference between the actual revenue and the Guaranteed Inpatient Revenue.

Hospitals in the program receive, in addition to normal periodic rate increases, a provision of $100,000 in order to actively monitor and analyze the hospital's case mix patterns. In the event that the hospital increases pre-admission testing or other outpatient services as a result of this program, funds will be provided in rates to offset increases in bad debt losses and charity allowances created by such efforts. It is the hospital's responsibility to report changes, to The Commission, in revenue associated with increased outpatient services.

The Commission is aware that hospitals which have had effective utilization review will have less opportunity to obtain cost savings under the GIR program. In fact, any prospective reimbursement system which does not base a hospital's payments on the cost of efficiently provided services but rather on actual costs will allow relatively inefficient hospitals a greater opportunity to generate discretionary income. The Commission does not believe, however, that this situation should undermine the development of payment systems with rational incentives. To forestall the implementation of such systems is to forestall the cost savings which would accompany them.

As indicated above, the GIR program is predicated on the assumption that ever increasing resource use in hospitals is the primary reason for hospital cost inflation. Consequently, the Commission has attempted to include in its rate setting systems additional incentives to limit the rate of increase in resource use. One such incentive relates to the method of adjusting the hospital's cost base when the hospital's actual volumes of service exceed the projected volumes. In this case, the hospital will normally receive income in excess of costs because the unprojected service volumes can be produced at a marginal cost which is less than the average cost included in the rate base. To eliminate the incentives to expand the amount of service provided, the Commission offsets this additional income against subsequent rates.

In order to differentiate the profits associated with increased volumes from profits generated as a result of cost savings, the Commission is currently carrying out a study to determine the marginal cost of the daily patient care services and of the major ancillary departments in a number of hospitals. A result of this study will be a precise method for determining the reasonable variation in costs associated with changes in the volume of service provided. In the interim, the Commission is assuming that 60% of the costs of the daily patient care services and 40% of the cost of ancillary services vary with increasing volume. In most hospitals these assumptions imply that, on average, about 50% of a hospital's inpatient costs are variable, and hence, that 50% are fixed. This percentage of fixed costs is applied to any increase in actual and budgeted revenue and is used as a rate of offset in subsequent periods.

During a period when hospital volumes are declining, the hospital's short term fixed costs will, however, exceed 50%. The pattern of declining volumes must first be established, followed by personnel reductions made through attrition or lay-offs. Such reductions frequently involve payment for back pay, accrued leave, severance pay and increased unemployment insurance compensation. Thus, short term fixed costs clearly exceed 50%. To encourage the elimination of marginal and unnecessary admissions, the Commission has established 80% as the fixed cost factor for unrealized admissions of less than 5% and a 50% fixed cost factor for any additional unrealized admissions.

Under the GIR program, there are six possible adjustments depending on whether admissions have increased, decreased by less than 5% or decreased by more than 5%, and whether or not the hospital has generated more revenue than the amount computed as the guaranteed inpatient revenue. To illustrate the GIR program, an example of one type of adjustment is presented below. The following notation is introduced:

R_P = Projected revenue (inpatient and outpatient)

R_A = Actual revenue (inpatient and outpatient)

R_L = Inpatient revenue.

R_G = Inpatient revenue guaranteed under the GIR program.

Assume the hospital has generated less revenue than the amount computed as the guaranteed inpatient revenue, ($R_G > R_L$) and that the hospital's actual revenue (R_A) exceeds the budgeted revenue (R_P). Given that variable costs constitute 50% of total hospital costs, the hospital's income has exceeded their reasonable costs by $0.5\ (R_A - R_P)$. Thus, the hospital's rates will be adjusted in subsequent periods by

$$-0.5(R_A - R_P).$$

On the other hand, the hospital has not exceeded the GIR limit. The difference between the total revenue guaranteed under the GIR and the total revenue actually received is:

$$R_G - R_L.$$

The cost saving attributable to not exceeding the GIR is this amount of revenue multipled by the proportion of variable costs (0.5). Thus, the hospital will have added to their rates:

$$0.5\ (R_G - R_L).$$

The total rate adjustment is, therefore:

$$-0.5(R_A - R_P) + 0.5(R_G - R_L).$$

Suppose a hospital had budgeted \$1,500,000 in inpatient revenue and realized \$1,760,000; assume further that the hospital was guaranteed \$1,400,000 under the GIR program but billed \$1,200.000. The values of the parameters in the rate adjustment formula would be:

R_A = \$1,760,000

R_p = \$1,500,000

R_G = \$1,400,000

R_L = \$1,200,000

Substituting these numbers into the adjustment formula yields the result that the hospital's subsequent rates would be reduced by \$130,000 to compensate for the unprojected increase in revenue and increased by \$100,000 for effective performance under the GIR:

$$-0.5(\$1{,}760{,}000 - \$1{,}500{,}000) = -\underline{\$130{,}000}$$

$$+0.5(\$1{,}400{,}000 - \$1{,}200{,}000) = \underline{\$100{,}000}$$

SUMMARY AND CONCLUSION

Hospital's costs per admission rise due to inflation in factor costs and to the ever increasing amount of factors used. Major reasons for the level of factor use per admission are the length of stay and the intensity of care. Hospital review mechanisms in the past have encouraged excessive length of stay and intensity. A conscious effort is required to rectify this situation and the method currently being applied in Maryland is presented. That system can only work with active cooperation of a hospital's medical staff.

The Commission's staff attempts to explain the system to a hospital's medical staff prior to the experimental period. We do not believe it is desirable (or possible) to design an unbeatable rate structure. The idea is to redesign a system such that consumers as well as providers benefit when the providers beat the system.

The above discussion is not meant to imply that hospital efficiency review and payment systems are the principal reasons for excessive quantities of services being performed in hospitals. The chief resource managers in the hospital industry, the key decision makers, are physicians. Physicians incentives are largely influenced by the fee-for-service system and the nature of medical education.

Physicians are trained to provide care to their patients with limited regard to whether that care is "worth the money," (i.e., is cost effective). The fee-for-service system gives strong financial incentives to do more. The incentive to provide excess quantity on the part of some fee-for-service physicians is underwritten by patients who are largely passive due to their insurance and aided by hospitals which benefit from the provision of additional care. We can directly alter only the hospital's incentives. Altering the nature of medical education, the incentives in the physician payment system and introducing more out-of-pocket payment by consumers will have much more long run impact on solving the hospital and medical cost problem than altering the way hospitals are paid.

In conclusion, to quote from the testimony of Alvin M. Powers, Chairman of the HSCRC, regarding the President's cost containment legislation, "Any system which tries to control hospital costs without attempting to effect the way physicians evaluate the necessity and appropriateness of medical care is doomed to failure." (Powers, 1977).

References

Cohen, Harold A. "Experiences of a State Cost Control Commission" in Ira E. Raskin and Michael Zubkoff eds., Hospital Cost Containment: Selected Notes for Future Policy. Milbank Memorial Fund. 1978.

Posner, Richard A. "Taxation by Regulation." The Bell Journal of Economics and Management Science. 2 (Spring 1971): 22-50.

Powers, Alvin M. "Statement on President's Hospital Cost Containment Proposal." Joint Hearing before the Subcommittee on Health, Committee on Ways and Means and the Subcommittee on Health and the Environment, Committee on Interstate and Foreign Commerce. May 11 and 12, 1977. Serial 95-20.

Staff, Health Services Cost Review Commission. Guidelines for Rate Review. Unpublished.

Admitting Physicians and Returns to Scale in the Production of Hospital Service *by Carson W. Bays**

INTRODUCTION

Much economic research on hospitals has been directed toward investigating the existence and measurement of scale efficiency in the provision of hospital care. That is, what hospital size will minimize the cost of producing a unit of "output" of a given quality level? This paper reviews the major findings of several cost and production function estimates of hospitals and discusses some common problems in the treatment of the role of the admitting physicians. An attempt is then made to empirically correct the deficiencies of earlier studies using a small panel of data on California hospitals.

THE ECONOMIC THEORY OF COST

The standard economic theory of the firm predicts that cost per unit will decline initially as the size of the organization grows because some inputs are indivisible and can be fully utilized only as some minimum size is attained. Cost per unit is expected to eventually increase, however, if the organization become so large that coordination of inputs is hampered by size and diversity.

The expectation is that cost and size will be related as illustrated in Figure 1. Average cost (AC) declines initially up to Q_0 implying that marginal cost (MC)---the additional total cost incurred in producing one additional unit of output---is below AC. After this minimum optimal scale is attained, costs remain constant until Q_1 where managerial inefficiences cause them to rise.

EMPIRICAL STUDIES OF SCALE ECONOMIES

Several empirical studies have attempted to confirm this theoretical prediction. Although the actual estimates of minimum optimal scale have differed widely in these studies, there appears to be a consensus that economies of scale are significant. Table I summarizes the results for twelve such studies. Note that the majority of

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Figure 1—Average and Marginal Cost Curves for a Representative Firm

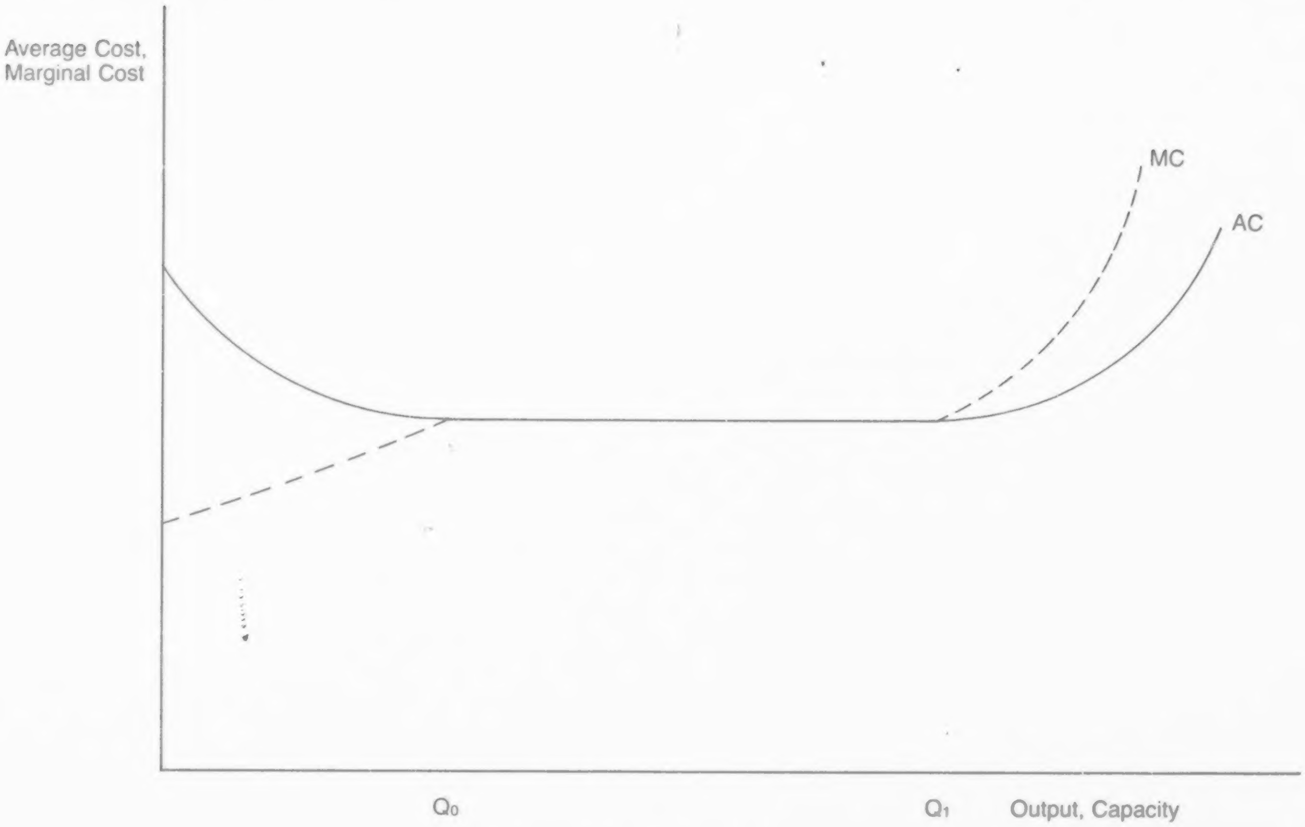

Table I—Summary of Results on Economics of Scale in Hospitals for Twelve Studies

Researcher	Conditions of Scale
Berry (1967)	Declining average cost
Cohen (1967)	U-shaped average cost curve; minimum at 200-300 beds
Evans (1971)	U-shaped average cost curve; minimum at 260 beds
M. Feldstein(1968)	Approximately constant average cost
P. Feldstein (1961)	Declining average cost
P. Feldstein and Carr (1967)	U-shaped average cost curve; minimum at 190 average daily census
Francisco (1970)	Declining average cost
Ingbar and Taylor (1968)	Inverted U-shaped average cost curve; maximum at 190 beds
Klarman (1965)	Declining average cost
Lave and Lave (1970)	Approximately constant average cost
Lave, Lave, and Silverman (1972)	Declining average cost
Ro (1968)	U-shaped average cost curve; minimum at 900 beds

researchers have found that cost per unit declines, at least initially, with increases in hospital size.[1]

All cost studies of U.S. and Canadian hospitals have a common weakness in that the central role of the admitting physicians in providing hospital care is ignored. The statistical techniques of production function and cost function estimation have been developed within the context of the neoclassical economic theory of the firm. The "firm" in the case of a nonprofit hospital is composed of the physical capital of the institution, its employees, and that portion of the labor of private physicians which directly involves the allocation of and combination with those facilities and personnel. Admitting physicians are typically not employed by the hospital so that reported hospital cost does not reflect the value of their input. But with the exception of Martin Feldstein's study of the British National Health Service hospitals, all of the cost and production function studies done to date focus on reported hospital cost only and therefore ignore a substantial portion of the total cost of providing hospital care.

The statistical importance of this depends upon how the omitted variable varies with respect to those variables which are included in the analysis. With respect to the estimate of economies of scale, optimal scale will be over- or underestimated depending upon whether the omitted variable varies greater or less than proportionately with the included variables. Most cost and production functions which have been estimated may therefore be seriously biased by ignoring the input of admitting physicians. The policy implications of these potential biases become more significant as direct regulation of hospital size and growth increases. The effectiveness of certificate of need programs, for example, depends in part on forcing hospitals to achieve the optimal size. However, the ability of studies of hospital costs to accurately indicate the optimal size of the hospital depends, crucially, upon the inclusion of *all* relevant inputs in the cost analysis.

MEASURING THE HOSPITAL INPUT OF ADMITTING PHYSICIANS

One major reason why admitting physicians have been ignored in previous estimates of hospital cost and production functions is the lack of direct data. The American Hospital Association collects annual information on the number of personnel employed by each hospital in the country, but most admitting physicians are not salaried employees. The American Medical Association's *Distribution of Physicians in the*

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[1] Ingbar and Taylor suggested that their finding of an inverted U-Shaped average cost curve may mean that hospitals of around 190 beds use excessive amounts of inputs compared to hospitals which are larger or smaller but they provide no theoretical basis for such an *ad hoc* rationalization.

United States series contain data on the number of hospital-based physicians but these are not accurate measures of the number of physicians on medical staffs. Some state departments of public health and regional planning agencies collect data on the number of physicians on medical staffs by specialty. However, many physicians have staff appointments at more than one hospital and there is no way of determining how they divide their time between office-based practice and hospital care among various hospitals.

Although direct data on the physician input are not presently available, a proxy measure is obtainable from hospital case abstracts. Most hospitals now use some type of centralized abstracting system which records, among other things, the admitting diagnosis and the specific operation and treatments performed during each hospital stay coded by the International Classification of Diseases-Amended. To convert the operation and treatment data into a measure of the input of admitting physicians requires that they be weighted in terms of their relative value. The California Relative Value Studies provides such a weighting scheme for operations and treatments in medicine, anesthesia, surgery, radiology, and pathology. These values are derived from median fees actually charged for operations and treatments by physicians. By using the appropriate dollar conversion factors it is possible to assign a monetary value to each operation and treatment performed. If these procedures are priced rationally, the fees should reflect the amount of skill required of the physician, the difficulty of the procedure, and the amount of time involved.[1]

The weaknesses of such a measure of the admitting physician input should be stressed. First, the only procedures included are those specifically recorded on the patient abstract. These include all surgical, obstetrical, and radiological procedures and some medical procedures performed by internists. However, a portion of the input of admitting physicians, such as time spent organizing and directing the patient's care in the hospital, is not recorded on the patient abstract and is therefore missing.

Second, while the relative fee categories cover approximately the same operations and treatments as does the ICDA classification scheme used by hospitals in the patient abstracts, the former do not map into the latter in any simple or consistent fashion. For instances in which several fee index categories are included in one ICDA category, the median fee index can be used. In other instances it is necessary to use a single fee index value for more than one ICDA group.

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[1] A study of a group of New York surgeons provides partial confirmation of this. There was a high and significant positive correlation (r = .97) between the CRVS index and observed operating room time. See Hughes (1972.)

Finally, because the price weights used are medians (both in terms of the original survey upon which they are based and with respect to the choice of the price weights for the ICDA categories which cover more than one fee index category), the resulting estimates of physician services probably understate the true differences in physician cost between hospitals. Thus, it will tend to underestimate the differences in total cost between the average hospital and a hospital which has cases of greater than average complexity for each diagnositc category. If case complexity increases with the size of the hospital, then this introduces a bias toward a finding of economies of scale in the cost or production function.

THE DATA

Case mix and treatment data were collected for 41 short-term general nonteaching hospitals in California for 1971 an 1972. Pooling the two years resulted in 56 observations (data on several hospitals were available only for a single year). Data on reported hospital cost, size, and utilization were drawn from the annual surveys of the American Hospital Association.

EMPIRICAL RESULTS

Average cost is a function of factor prices, size, and the rate of plant utilization. Because the hospital produces a multidimensional type of output, it is also necessary to include some measure of the mix of cases treated in the cost function. The actual estimating equation is:

1. $AC = f(BEDS, CF, I, M)$

where
AC = average cost per case
BEDS = number of beds
CF = case flow, defined as the number of cases per bed per year
I = index of factor prices
M = a measure of the mix of cases treated.

Estimating this relation with multiple linear regression allows us to study the independent effects of each explanatory variable on the dependent variable.[1] The equation was estimated twice: once using reported hospital cost as the dependent variable and then again using an estimated total cost variable composed of reported hospital cost plus the imputed value of admitting physicians services. The resulting implications for scale efficiency are illustrated in Figure 2. The curve labelled AHC represents the estimated cost per case in relation to bed size where cost is measured to include only reported hospital cost as has been typically done in previous studies. AHC declines initially to a minimum at approximately 115 beds and increases gradually beyond that point. The initial decline in cost with bed size is gradual indicating very slight economies of scale. The implications are quite different, however, when the more complete cost measure, ATC, is used. ATC includes average hospital cost per case (AHC) plus the imputed average value of admitting physician services. ATC increases with bed size throughout the observed range of bed size.

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[1] Complete regression results are contained in Bays (1977). A statistical summary of the sample is presented in Table II.

SUMMARY AND CONCLUSIONS

This paper has surveyed the results on economies of scale in the provision of hospital care and has suggested the potential errors which may result from ignoring the input of admitting physicians. A method of estimating the physician input to hospital care was described and then tested on a small panel of data on California hospitals. Although the measurement technique is imprecise and the data set is small, the results suggest that previous estimates of hospital cost functions may yield inaccurate implications regarding economies of scale.

It should be stressed that the data for this study were not randomly selected[1] and the adjustment for case mix differences between hospitals is imperfect. It is possible that the observed increase in cost per case with bed size reflects the failure to adequately account for quality variations over hospitals of different sizes. However, the procedure for estimating the admitting physician input probably introduces biases in the opposite direction.

One implication of the results presented here is that the admitting physician input may be less effectively managed as the size of the hospital increases. The range of hospital size in the sample is not great (the largest is 285 beds) so that it would be necessary to observe whether these results prevail over a larger range of hospital sizes before pressing this interpretation. It is not possible to estimate the optimal hospital size for the ATC function because the best fitting equation was linear. However, it is interesting to note that chain for profit hospitals, which would be expected to be most successful with cost effective management, typically build and operate hospitals of less than 300 beds.

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[1] The data set is composed of those hospitals which used a centralized abstracting system and which agreed to release their data for purposes of the study.

Generalizing these results must be done cautiously because of the limited data upon which they are based. They do suggest, however, that the conclusions of previous studies regarding economies of scale in hospitals must be regarded skeptically.

Table II—Statistical Summary of the Forty-one Sample Hospitals (N=56)

Variable	Mean	Standard Deviation	Minimum	Maximum
BEDS	122	73.2	33	285
AHC	690	136.8	484	1142
ATC	983	133	775	1398
ADMAJ[a]	5721	3752	1236	14645

[a] Inpatient admissions adjusted for outpatient visits.

References

Bays, Carson W. "Specification Error in the Estimation of Hospital Cost and Production Functions," University of Illinois at Chicago Circle, College of Business Administration Working Paper 1977.

Berry, Ralph, "Return to Scale in the Production of Hospital Services," Health Services Research 2, no. 3 (Summer 1967): 123-139.

California Medical Association. 1969 Relative Value Studies. San Francisco: Sutter Street Publications, 1969.

Cohen, Harold A. "Variation in Costs Among Hospitals for Different Sizes." Southern Economic Journal 33, no. 1 (January 1967): 355-366.

Evans, R. G. "Vehavioral' Cost Functions for Hospitals," The Journal of Economics 4, no. 2 (May 1971): 198-215.

Feldstein, Martin S. Economic Analysis for Health Service Efficiency. Amsterdam: North-Holland Publishing Company, 1968.

Feldstein, Paul J. An Empirical Investigation of the Marginal Cost of Hospital Service. Chicago: University of Chicago Press, 1961.

Francisco, Edgar W. "Analysis of Cost Variations Among Short Term General Hospitals" in Klarman, Herbert E. editor, Empirical Studies in Health Economics. Baltimore: The Johns Hopkins Press, 1968.

Hughes, Edward F. X. and others. "Surgical Work Loads in a Community Practice." Surgery 71, no. 1 (March 1972): 315-327.

Ingbar, Mary Lee and Taylor, Lester D. Hospital Costs in Massachusetts. Cambridge: Harvard University Press, 1968.

Klarman, Herbert E. The Economics of Health. New York: Columbia University Press, 1965.

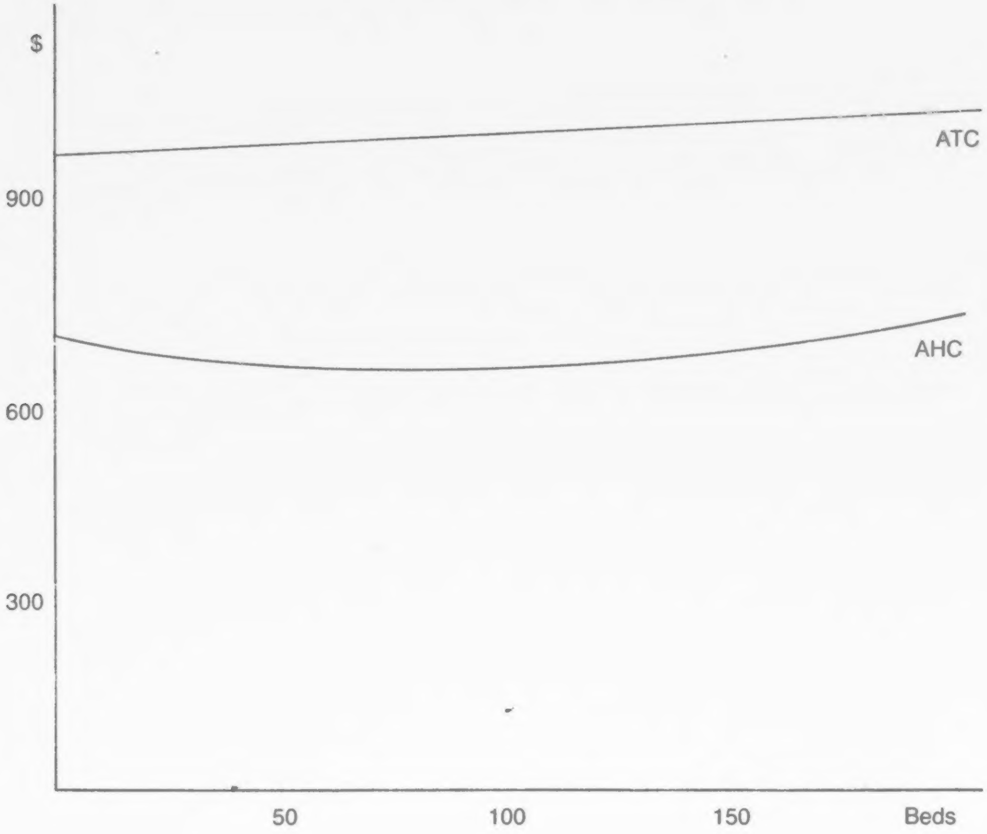
Lave, Judith R. and Lave, Lester B. "Hospital Cost Functions." American Economic Review 60, no. 3. (June 1970): 379-395.

Lave, Judith R., Lave, Lester B., and Silverman, Lester P. "Hospital Cost Estimation Controlling for Case Mix." Applied Economics 4, no. 3, (September 1972): 165-180.

Ro, Kyung-Kong. "Determinants of Hospital Costs." Yale Economic Essays, 1968: 185-257.

Part III—Selected Tabulations

Figure 2—Estimated Average Cost for the Hospital With and Without Physician Inputs



Physician Manpower

This section presents data drawn from the AMA's Physician Masterfile. The Association has maintained a Masterfile of physicians since 1906. As research activities within the Association have become more sophisticated, the Masterfile has been expanded and improved. At present, the AMA Physician Masterfile is the most comprehensive and complete source of physician data in the United States. All physicians comprising the active and inactive physician manpower pool of the U. S. and possessions are included on the Masterfile.[1]

On the basis of the answers to the Record of Physicians' Professional Activities questionnaire, physicians are classified by activity, specialty and employment status. The format of the activity classification is:

I. Patient Care
    A. Office Based Practice
    B. Hospital Based Practice
        1. residents — all years
        2. full-time physician staff

II. Other Professional Activity
    A. Medical Teaching
    B. Administration
    C. Research
    D. Other

III. Not Classified

IV. Inactive

V. Address Unknown

VI. Temporarily Located in A Foreign Country

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[1] For a detailed description of the AMA Physician Masterfile as well as additional data from the Masterfile on specialty, activity, location, and licensure of physicians see: Goodman, L. J.: Physician Distribution and Medical Licensure in the U. S., 1976. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

A physician is classified as "patient care" if he devotes the largest proportion of his hours of work to direct patient care and as "other" if he devotes the largest proportion of his hours of work to an activity other than direct patient care. Among the "patient care" physicians, a physician is further classified as "office based" if he is not employed for the largest proportion of his hours of work by a hospital and as "hospital based" if he is employed for the largest proportion of his hours of work by a hospital. Thus, a "patient care" radiologist who provides his services almost entirely within a hospital setting but is not actually employed by the hospital would be classified as "office based."

One of the 74 specialty codes is assigned to each physician according to the specialty in which he spends the largest proportion of his hours of work.[1] For specialty data in the Physician Distribution and Medical Licensure in the U. S. and in this volume, the 74 specialty codes are compressed into 36 specialties. In this volume, the 36 specialties are frequently reduced further into eight alternative specialties.

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[1] 82 different specialties are designated at present.

Activity, Location and Specialty of Physicians

As of December 31, 1976, there were 409,446 physicians in the United States and its possessions. Of the total physician population, 85.1% (348,443 physicians) were active and classified, with known addresses. Of these 348,443 physicians, 91.4% (318,412) were involved in patient care as their primary activity. The primary activities of the remaining 30,031 active classified physicians with known addresses were:

- medical teaching (6,935)
- administration (11,689)
- research (8,514)
- other (2,893)

Of the 318,412 patient care physicians, 68.0% (216,533) were in office based practice and 32.0% (101,879) were in hospital based practice.

Of the 373,111 non-federal physicians with known addresses, who resided in the United States and possessions in 1976, 25.1% (93,786) were located in the states of California and New York. Other states with more than ten thousand physicians in 1976 include:

- Pennsylvania (20,619; 5.5%)
- Illinois (18,995; 5.1%)
- Texas (17,309; 4.6%)
- Ohio (16,201; 4.3%)
- Florida (16,001; 4.3%)
- Massachusetts (14,185; 3.8%)
- Michigan (13.519; 3.6%)
- New Jersey (13,107; 3.5%)

Of the 348,443 classified, active physicians with known addresses, 16.6% (57,911) specialized in internal medicine. Other specialties with more than 20,000 physicians include:

- general practice (55,479); 15.9%)
- general surgery (32,292; 9.3%)
- psychiatry (24,432; 7.0%)
- pediatrics (22,491; 6.5%)
- obstetrics and gynecology (22,294; 6.4%)

As of December 31, 1975, there were 166,986 physicians holding 173,930 specialty board certifications from one or more of the 22 American Specialty Boards. The number of board certifications exceeds the number of physicians certified because some physicians are certified by more than one specialty board. Two-thirds of all board certifications held by physicians in 1975 were awarded by the following seven American Specialty Boards:

- Internal medicine (32,953)
- Surgery (19,379)
- Pediatrics (16,057)
- Obstetrics and Gynecology (13,745)
- Radiology (13,089)
- Psychiatry and Neurology (12,364)
- Pathology (9,204)

Table 1—Federal and Non-Federal Physicians in United States and Possessions by Activity, December 31, 1976

Activity Specialty Group	Number	Federal		Non-Federal	
		Number	Percent	Number	Percent
Total Physicians[a]	348,443	27,578	7.9	320,865	92.1
Total Patient Care	318,412	23,682	7.4	294,730	92.6
General Practice	54,332	2,278	4.2	52,054	95.8
Medical Specialties	89,213	7,259	8.1	81,954	91.9
Surgical Specialties	95,102	5,924	6.2	89,178	93.8
Other Specialties	79,765	8,221	10.3	71,544	89.7
Medical Teaching	6,935	682	9.8	6,253	90.2
Administration	11,689	1,756	15.0	9,933	85.0
Research	8,514	1,086	12.8	7,428	87.2
Other	2,893	372	12.9	2,521	87.1

[a] Excludes 22,117 inactive, 30,129 Not Classified, and 8,757 Address Unknown.

Note: Percentages may not add due to rounding.

Source: Goodman, Louis J.: Physician Distribution and Medical Licensure in the U. S., 1976. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

Table 2—Federal and Non-Federal Physicians in United States and Possessions by Specialty and Activity, December 31, 1976

	UNITED STATES AND POSSESSIONS								
		MAJOR PROFESSIONAL ACTIVITY							
		PATIENT CARE				OTHER PROFESSIONAL ACTIVITY			
				HOSP. BASED PRACTICE					
Specialty	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Administration	Research	Other
Total Physicians	409,446[a]	318,412	216,533	63,046	38,833	6,935	11,689	8,514	2,893
General Practice	55,479	54,332	46,628	4,388	3,316	232	628	64	223
Medical Spec.	99,357	89,213	54,388	24,444	10,381	2,580	2,874	4,191	499
Allergy	1,704	1,571	1,493		78	24	22	83	4
Cardiovas. Dis.	6,769	5,722	4,821		901	300	235	447	65
Dermatology	4,817	4,559	3,601	648	310	86	47	103	22
Gastroenterology	2,374	1,953	1,651		302	140	61	211	9
Internal Med.	57,911	52,305	28,170	18,282	5,853	1,179	1,636	2,527	264
Pediatrics	22,491	20,520	12,981	5,383	2,156	613	696	552	110
Ped. Allergy	477	436	333	73	30	13	6	22	
Ped. Cardiology	548	406	231	58	117	64	24	51	3
Pulmonary Dis.	2,266	1,741	1,107		634	161	147	195	22

(continued on following page)

Table 2—*Continued*

	UNITED STATES AND POSSESSIONS								
		MAJOR PROFESSIONAL ACTIVITY							
			PATIENT CARE			OTHER PROFESSIONAL ACTIVITY			
				HOSP. BASED PRACTICE					
Specialty	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
Surgical Specialties	98,667	95,102	68,654	19,079	7,369	1,266	1,138	851	310
Gen. Surgery	32,292	31,119	19,864	8,542	2,713	369	466	237	101
Neuro. Surg.	2,985	2,836	2,044	535	257	55	27	53	14
Obst. & Gyn.	22,294	21,326	15,995	3,828	1,503	311	375	220	62
Opthalmology	11,455	11,090	8,944	1,616	530	114	61	160	30
Ortho. Surgery	11,814	11,472	8,426	2,061	985	163	69	61	49
Otolaryngology	5,864	5,680	4,381	843	456	82	45	37	20
Plastic Surgery	2,351	2,284	1,816	340	128	35	11	16	5
Col. Rec. Surg.	673	662	602	32	28	1	5	3	2
Thoracic Surg.	2,036	1,923	1,414	276	233	42	37	27	7
Urological Surg.	6,903	6,710	5,168	1,006	536	94	42	37	20

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Table 2—*Continued*

	UNITED STATES AND POSSESSIONS								
		MAJOR PROFESSIONAL ACTIVITY							
		PATIENT CARE				OTHER PROFESSIONAL ACTIVITY			
				HOSP. BASED PRACTICE					
Specialty	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Administration	Research	Other
Other Specialties	94,940	79,765	46,863	15,135	17,767	2,857	7,049	3,408	1,861
Aerospace Med.	660	384	166	18	200	9	210	32	25
Anesthesiology	13,182	12,348	9,074	1,737	1,537	523	163	107	41
Child Psych.	2,644	2,186	1,496	309	381	143	222	53	40
Diag. Radiology	3,832	3,547	2,254	555	738	139	28	28	90
Forensic Path.	207	107	88	8	11	9	37	8	46
Neurology	4,425	3,707	1,969	1,140	598	227	90	362	39
Occup. Medicine	2,322	1,684	1,582	8	94	7	523	23	85
Psychiatry	24,432	21,478	12,432	3,959	5,087	509	1,829	450	166
Pathology	11,919	9,813	4,272	2,559	2,982	424	455	622	605
Phys. Med./Reh.	1,715	1,544	629	298	617	34	99	16	22

(continued on following page)

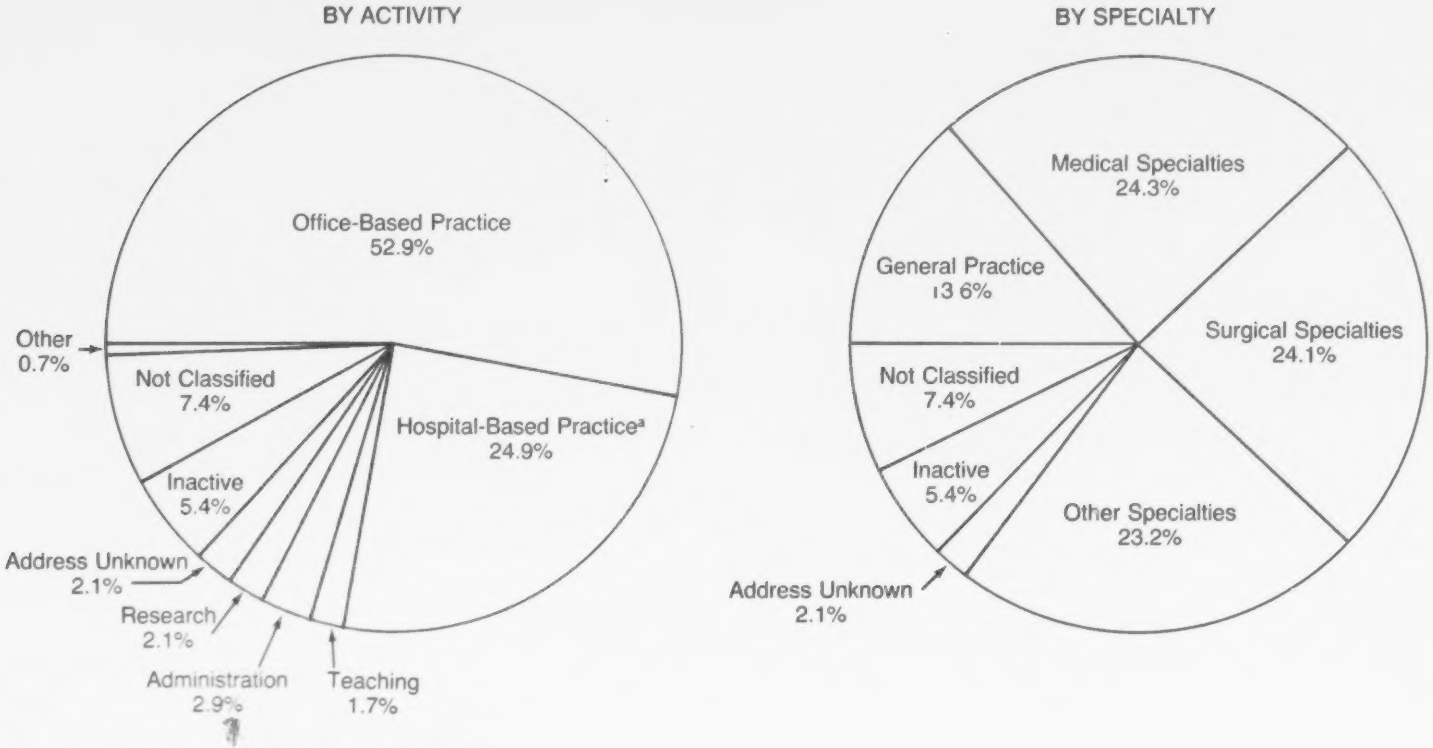
Table 2—*Continued*

		UNITED STATES AND POSSESSIONS							
		MAJOR PROFESSIONAL ACTIVITY							
			PATIENT CARE			OTHER PROFESSIONAL ACTIVITY			
				HOSP. BASED PRACTICE					
Specialty	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
Gen. Prev. Med.	808	393	236	73	84	46	273	66	30
Public Health	2,600	756	513	32	211	95	1,498	121	130
Radiology	11,728	10,999	7,028	1,822	2,149	251	123	123	232
Therapeutic Rad.	1,209	1,150	704	210	236	30	10	18	1
Other Specialty	7,638	4,559	2,970		1,589	344	1,252	1,273	210
Unspecified	5,619	5,110	1,450	2,407	1,253	67	237	106	99
Not Classified	30,129								
Inactive	22,117								
Address Unknown	8,757								

[a] Excludes 5,604 Temporary Foreign.

Source: Goodman, Louis J.: Physician Distribution and Medical Licensure in the U. S, 1976. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

Figure 1—Federal and Non-Federal Physicians in United States and Possessions by Specialty and Activity, December 31, 1976



[a] Includes residents (all years) and full-time physician staff.

Source: Goodman, L: *Physician Distribution and Licensure in the U.S., 1976.* Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

Table 3—Non-Federal Physicians in United States and Possessions by State and Activity, December 31, 1976

		Major Professional Activity							
		Patient Care				Other Professional Activity			
				Hosp. Based Practice					
State	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
Total[a]	373,111	294,730	214,710	58,924	21,096	6,253	9,933	7,428	2,521
Alabama	3,951	3,257	2,653	498	106	66	76	87	21
Alaska	366	283	272		11	3	13	3	1
Arizona	4,221	3,155	2,449	521	185	68	93	35	29
Arkansas	2,253	1,853	1,505	283	65	43	43	17	17
California	47,172	36,628	29,231	5,466	1,931	733	1,278	955	374
Canal Zone	57	45	5	35	5		2		
Colorado	4,871	3,876	2,914	769	193	89	142	94	34
Connecticut	7,113	5,543	3,738	1,244	561	117	278	209	49
Delaware	908	752	545	133	74	8	31	6	
Dis. of Columbia	3,383	2,491	1,452	888	151	112	159	87	27
Florida	16,001	11,600	9,315	1,513	772	182	271	154	123
Georgia	6,383	5,318	4,114	916	288	126	152	69	34
Hawaii	1,567	1,221	1,001	152	68	28	59	18	11
Idaho	874	743	710	6	27	5	10	6	9
Illinois	18,995	15,148	10,720	3,267	1,161	307	513	332	144

(continued on following page)

Table 3—*Continued*

		Major Professional Activity							
		Patient Care				Other Professional Activity			
				Hosp. Based Practice					
State	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
Indiana	6,401	5,320	4,351	704	265	97	143	77	38
Iowa	3,325	2,773	2,110	555	108	69	53	56	23
Kansas	3,221	2,552	1,981	411	160	46	68	53	22
Kentucky	4,320	3,546	2,703	684	159	99	85	59	28
Louisiana	5,266	4,060	3,220	605	235	131	94	74	40
Maine	1,488	1,194	992	96	106	16	44	12	10
Maryland	9,351	6,946	4,457	1,808	681	206	346	340	60
Massachusetts	14,185	10,766	6,868	2,792	1,106	210	418	646	97
Michigan	13,519	11,031	7,449	2,811	771	209	326	170	78
Minnesota	7,015	5,670	3,959	1,462	249	136	143	180	45
Mississippi	2,248	1,916	1,572	252	92	23	34	18	12
Missouri	7,379	5,787	3,919	1,461	407	142	179	223	44
Montana	915	788	759	2	27	3	9	4	7
Nebraska	2,135	1,734	1,307	371	56	74	59	24	6
Nevada	778	653	601	2	50	7	19	2	6
New Hampshire	1,374	1,104	900	156	48	16	36	24	10

(continued on following page)

Table 3—*Continued*

		Major Professional Activity							
		Patient Care				Other Professional Activity			
				Hosp. Based Practice					
State	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
New Jersey	13,107	10,402	7,631	1,706	1,065	123	412	210	99
New Mexico	1,586	1,224	964	203	57	28	48	22	10
New York	46,614	35,786	21,936	9,659	4,191	827	1,558	1,280	326
North Carolina	7,403	6,013	4,376	1,339	298	143	223	195	46
North Dakota	725	608	559	21	28	12	12	8	3
Ohio	16,201	13,326	9,402	3,048	876	253	338	195	97
Oklahoma	3,223	2,703	2,171	420	112	57	64	32	16
Oregon	4,134	3,278	2,633	503	142	71	98	52	27
Pennsylvania	20,619	16,640	11,335	3,823	1,482	356	586	446	159
Puerto Rico	3,109	2,404	1,497	406	501	58	95	26	9
Rhode Island	1,822	1,494	1,008	333	153	16	35	25	15
South Carolina	3,304	2,643	2,056	440	147	61	92	20	13
South Dakota	631	529	468	41	20	6	10		2
Tennessee	6,108	4,923	3,647	1,029	247	125	165	100	30
Texas	17,309	13,968	10,855	2,520	593	333	369	308	89
Utah	1,971	1,634	1,192	373	69	34	44	46	11

(continued on following page)

Table 3—*Continued*

		Major Professional Activity							
		Patient Care				Other Professional Activity			
				Hosp. Based Practice					
State	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Administration	Research	Other
Vermont	1,031	769	568	162	39	24	35	39	8
Virginia	7,541	5,980	4,523	1,152	305	128	207	117	52
Virgin Islands	87	69	42	1	26		5		
Washington	6,163	4,890	4,048	661	181	100	168	161	28
West Virginia	2,389	1,885	1,434	293	158	28	49	15	18
Wisconsin	6,512	5,401	4,216	927	258	98	131	97	59
Wyoming	423	348	328	1	19		12		4
Pacific Islands	64	60	49		11	1	1		1

[a] Includes 30,129 Not Classified, and 22,117 Inactive.

Source: Goodman, Louis J.: Physician Distribution and Medical Licensure in the U. S., 1976. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

Table 4—Specialty Board Certifications by Specialty Board, December 31, 1974 and December 31, 1975

Specialty Board	Year Established	Specialty Board Certifications 12/31/74	Specialty Board Certifications 12/31/75
Total		161,534[a]	173,930[b]
Allergy and Immunology	1971	1,061	1,104
Anesthesiology	1937	6,249	6,749
Colon and Rectal Surgery	1934	423	438
Dermatology	1932	3,163	3,311
Family Practice	1970	7,018	8,585
Internal Medicine	1936	30,016	32,953
Neurological Surgery	1940	1,649	1,731
Nuclear Medicine	1971	1,574	1,624
Obstetrics and Gynecology	1930	12,535	13,745
Opthalmology	1917	7,430	7,760
Orthopaedic Surgery	1934	8,095	8,491
Otolaryngology	1924	5,061	5,188
Pathology	1936	8,623	9,204
Pediatrics	1933	15,167	16,057
Physical Medicine & Rehabilitation	1947	932	968
Plastic Surgery	1937	1,292	1,402
Preventive Medicine	1948	2,415	2,471
Psychiatry and Neurology	1934	11,692	12,364
Radiology	1934	11,560	13,089
Surgery	1937	18,712	19,379
Thoracic Surgery	1948	2,771	2,855
Urology	1935	4,096	4,462

[a] An estimated total of 154,911 physicians were Board Certified as of December 31, 1974.

[b] An estimated total of 166,986 physicians were Board Certified as of December 31, 1975.

Source: Profile of Medical Practice, 1977. Center for Health Services Research and Development, American Medical Association.

Women Physicians

On December 31, 1976, there were a total of 38,761 women physicians in the United States and possessions. Of this total, 74.7% (28,966) were active and classified, with known addresses. The distribution by activity of these 28,966 women physicians was:

- patient care (25,896; 89.4%)
- medical teaching (844; 2.9%)
- administration (1,077; 3.7%)
- research (816; 2.8%)
- other (333; 1.1%)

The specialty group distribution of active, classified women physicians with known addresses was:

- general practice (3,164; 10.9%)
- medical specialty (10,884; 37,6%)
- surgical specialty (3,362; 11.6%)
- other specialty (11,556; 39.9%)

On December 31, 1976 the mean age of male physicians with known addresses was 46.3 years while the mean age of women physicians with known addresses was 42.4 years. Note that:

- 39.3% of the women physicians were less than 35 years of age, while 26.7% of male physicians were less than 35.
- 9.8% of women physicians were 65 and older, while 13.4 of male physicians were 65 and older.

Of the 28,966 active, classified women physicians with known addresses, 93.0% (26,937) were nonfederal physicians while 7.0% (2,029) were federal physicians. Of the 25,896 women physicians whose principal activity was patient care, 93.2% (24,127) were nonfederal physicians, while 6.8% (1,769) were federal physicians.

Physician-Population Ratios

In 1976, the District of Columbia had the highest ratio of total non-federal physicians to population (488 per 100,000 persons) and the highest ratio of non-federal patient care physicians to population (359 per 100,000 persons). States with more than 170 non-federal patient care physicians per 100,000 persons include:

- New York (198 per 100,000 persons)
- Massachusetts (186 per 100,000 persons)
- Connecticut (178 per 100,000 persons)
- California (172 per 100,000 persons)

States with less than 90 patient care physicians per 100,000 persons include:

- Alabama (89 per 100,000 persons)
- Arkansas (88 per 100,000 persons)
- Mississippi (82 per 100,000 persons)
- Alaska (79 per 100,000 persons)
- South Dakota (78 per 100,000 persons)

Over the period 1968 to 1976, the number of non-federal physicians per 100,000 persons increased 21.0%, from 143 per 100,000 persons to 173 per 100,000 persons. In the same period, the number of non-federal, patient care physicians increased 15.1%, from 119 per 100,000 persons to 137 per 100,000 persons.

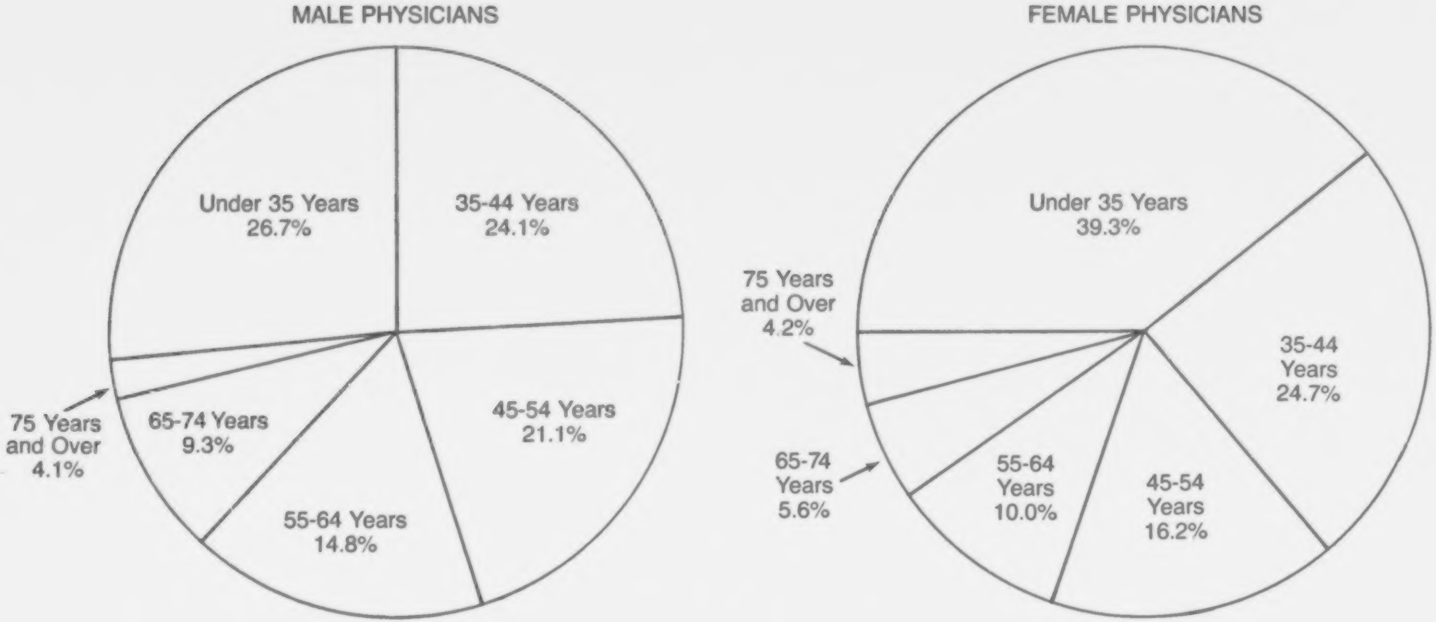
Table 5—Federal and Non-Federal Physicians in United States and Possessions by Age and Sex, December 31, 1976

	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Total[a]	400,688	100.0	363,109	100.0	37,579	100.0
Under 35	111,775	27.9	97,019	26.7	14,756	39.3
35-44	96,835	24.2	87,536	24.1	9,299	24.7
45-54	82,252	20.5	76,146	21.0	6,106	16.2
55-64	57,601	14.4	53,854	14.8	3,747	10.0
65-74	35,936	9.0	33,830	9.3	2,106	5.6
75 and Over	16,289	4.1	14,724	4.1	1,565	4.2

[a] Excludes 8,757 Address Unknown.

Source: AMA Physician Masterfile, 1976. Special Tabulations. Center for Health Services Research and Development, American Medical Association.

Figure 2—Federal and Non-Federal Physicians in United States and Possessions by Age and Sex, December 31, 1976



Source: AMA Physician Masterfile, 1976. Special Tabulations Center for Health Services Research and Development, American Medical Association.

Table 6—Federal and Non-Federal Women Physicians in United States and Possessions by Activity, December 31, 1976

Activity	Total	Federal		Non-Federal	
		Number	Percent	Number	Percent
Total[a]	28,966	2,029	7.0	26,937	93.0
Total Patient Care	25,896	1,769	6.8	24,127	93.2
General Practice	3,064	172	5.6	2,892	94.4
Medical Specialties	9,664	599	6.2	9,065	93.8
Surgical Specialties	3,205	121	3.8	3,084	96.2
Other Specialties	9,963	877	8.8	9,086	91.2
Medical Teaching	844	43	5.1	801	94.9
Administration	1,077	104	9.7	973	90.3
Research	816	66	8.1	750	91.9
Other	333	47	14.1	286	85.9

[a] Excludes 3,535 Inactive, 5,078 Not Classified, and 1,182 Address Unknown.

Source: Goodman, Louis J.: *Physician Distribution and Medical Licensure in the U. S., 1976*. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

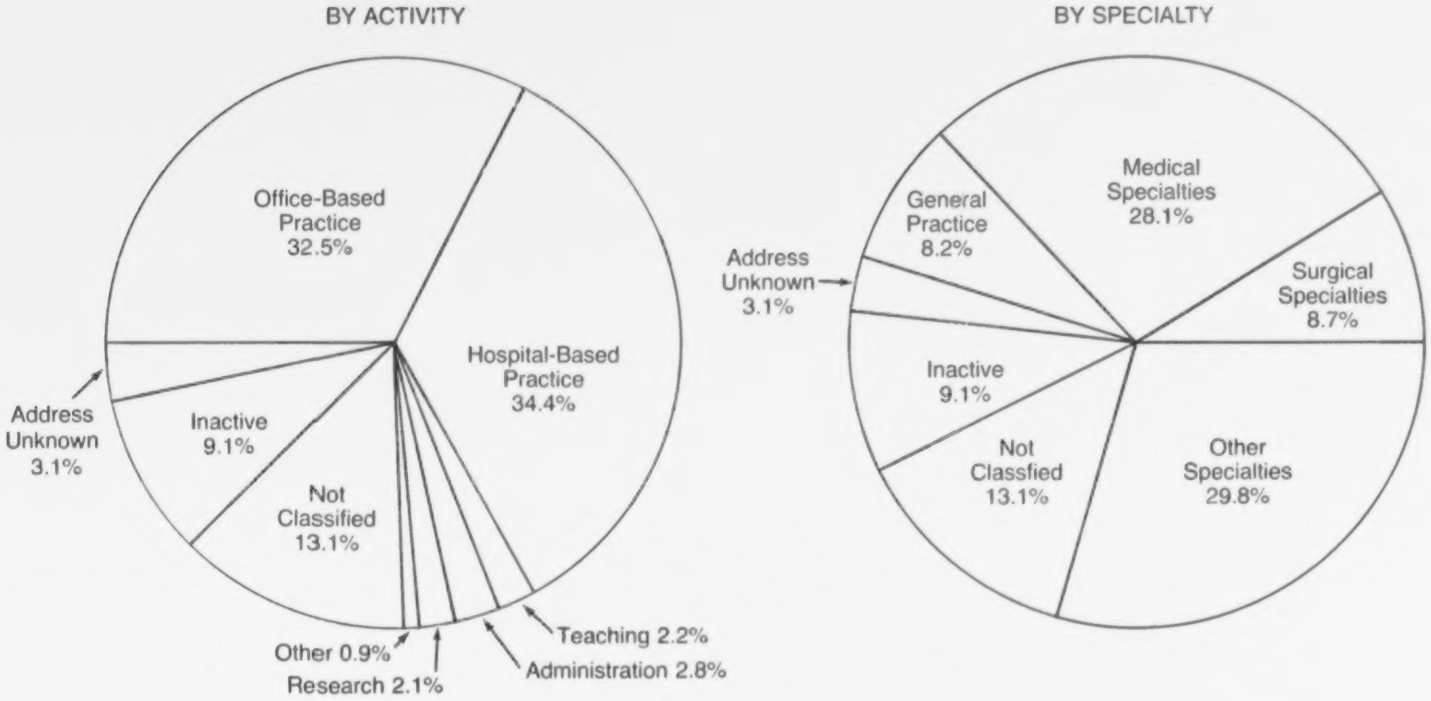
Table 7—Federal and Non-Federal Women Physicians in United States and Possessions by Specialty Group and Activity, December 31, 1976

		Major Professional Activity							
		Patient Care				Other Professional Activity			
Specialty Group	Total Physicians	Patient Care Total	Office Based Practice	Residents All Years	Full-Time Physician Staff	Medical Teaching	Adminis-tration	Research	Other
Total[a]	28,966	25,896	12,581	8,848	4,467	844	1,077	816	333
Gen. Prac.	3,164	3,064	2,147	533	384	19	55	5	21
Med. Spec.	10,884	9,664	4,361	3,833	1,470	393	303	447	77
Surg. Spec.	3,362	3,205	1,583	1,363	259	52	48	42	15
Other Spec.	11,556	9,963	4,490	3,119	2,354	380	671	322	220

[a] Excludes 5,078 Not Classified, 3,535 Inactive, and 1,182 Address Unknown.

Source: Goodman, Louis J.: Physician Distribution And Medical Licensure In The U. S., 1976. Chicago, Center For Health Services Research and Development, American Medical Association, 1976.

Figure 3—Federal and Non-Federal Women Physicians in United States and Possessions by Activity and Specialty, December 31, 1976



Source: Goodman, L: *Physician Distribution and Licensure in the U.S., 1976.* Chicago, Center for Health Services Research and Development, American Medical Association, 1977

Characteristics of Medical Practice

The tables in this section are based on the AMA's Eleventh Periodic Survey of Physicians (PSP11), which was conducted between November 1976 and July 1977. The survey questionnaire was mailed to a randomly selected sample of 10,655 non-federal, office-based, patient care physicians.[1] A copy of the PSP11 questionnaire is included in the appendix to this volume. For a description of the historical development of the AMA's PSP survey as well as a detailed discussion of the design and methodology of the survey, see the following article by Sharon Henderson.

TABLE FORMAT

Data tabulated in this section provide information on physicians' work patterns, fees, expenses, and net incomes from medical practice. The data are presented by type of practice (number of physicians in the practice), specialty, and geographic location (census division as well as population size of county). Where possible, comparative data from earlier PSPs are presented.[2]

In the following tables, the 36 specialties presented in the AMA's Physician Distribution and Medical Licensure series are compressed into eight specialty groups. The eight specialty groups include:

(1) General Practice consisting of General and Family Practitioners only;

(2) Internal Medicine consisting of specialists in Internal Medicine, Allergy, Cardiovascular Disease, Gastroenterology, and Pulmonary Disease;

(3) Surgery consisting of specialists in General Surgery, Neurological Surgery, Opthalmology, Orthopedic Surgery, Oto-

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[1] A patient care physician devotes the largest proportion of his hours of work to direct patient care and an office-based physician is employed for the largest proportion of his hours of work by an organization other than a hospital.

[2] Figures in some tables may not agree with previously published figures because an attempt has been made to present comparable data over time.

laryngology, Plastic Surgery, Colon and Rectal Surgery, Thoracic Survery, and Urology;

(4) Pediatrics consisting of specialists in Pediatrics, Pediatric Allergy and Pediatric Cardiology;

(5) Obstetrics and Gynecology;

(6) Radiology consisting of specialists in Radiology, Diagnostic Radiology, and Therapeutic Radiology;

(7) Psychiatry consisting of specialists in Psychiatry and Child Psychiatry; and

(8) Anesthesiology

Specialists in Dermatology, Neurology, Occupational Medicine, Pathology, Physical Medicine and Rehabilitation, Forensic Pathology, Aerospace Medicine, Public Health, and General Preventive Medicine, as well as physicians practicing in other or unspecified specialties are included in the aggregate totals only.

STANDARD OF RELIABILITY

In this section, a figure is not reported for a cell unless two standards are met:

- At least four observations fall within the cell
- The ratio of the standard error to the mean is 0.5 or less.

SURVEY RESPONSE

After five mailings, the survey yielded a usable response rate of 50.0%. As shown in Tables I to III, the 53[illegible]0 respondents to the survey appear to be comparable to physicians in the total survey population with respect to age, specialty, and geographic location.

Table I—Distribution by Age of the Sample Population and the Respondents to the Eleventh Periodic Survey of Physicians

	Percent Distribution by Age			
	Population		Respondents	
Age	N	%	N	%
Unknown	497	0.2	0	0.0
Less than 35	20,119	9.9	479	9.0
35 - 49	81,337	40.2	2,271	42.6
50 - 64	71,985	35.5	1,991	37.4
65 and older	28,570	14.1	589	11.1
TOTAL	202,508	100.0	5,330	100.0

Table 8—Non-Federal Physicians, Civilian Population, Physician-Population Ratios and Rank by State, 1976

State	Civilian Population (7-1-76)	Non-Federal Physicians (12-31-76)		Physicians Per 100,000 Population		Rank of Physician-Population Ratio By State	
		Total	Patient Care	Total	Patient Care	Total	Patient Care
Alabama	3,640,000	3,951	3,257	109	89	46	47
Alaska	357,000	366	283	103	79	49	50
Arizona	2,243,000	4,221	3,155	188	141	12	14
Arkansas	2,099,000	2,253	1,853	107	88	47	48
California	21,234,000	47,172	36,628	222	172	6	5
Colorado	2,535,000	4,871	3,876	192	153	10	9
Connecticut	3,106,000	7,113	5,543	229	178	4	4
Delaware	576,000	908	752	158	131	21	21
D.C.	693,000	3,383	2,491	488	359	1	1
Florida	8,326,000	16,001	11,600	192	139	9	16
Georgia	4,912,000	6,383	5,318	130	108	36	34
Hawaii	831,000	1,567	1,221	189	147	11	10
Idaho	824,000	874	743	106	90	48	45
Illinois	11,191,000	18,995	15,148	170	135	18	18

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Table 8—*Continued*

State	Civilian Population (7-1-76)	Non-Federal Physicians (12-31-76)		Physicians Per 100,000 Population		Rank of Physician-Population Ratio By State	
		Total	Patient Care	Total	Patient Care	Total	Patient Care
Indiana	5,295,000	6,401	5,320	121	100	40	40
Iowa	2,869,000	3,325	2,773	116	97	43	42
Kansas	2,283,000	3,221	2,552	141	112	28	32
Kentucky	3,390,000	4,320	3,546	127	105	38	38
Louisiana	3,815,000	5,266	4,060	138	106	32	35
Maine	1,059,000	1,488	1,194	141	113	29	29
Maryland	4,099,000	9,351	6,946	228	169	5	6
Massachusetts	5,797,000	14,185	10,766	245	186	3	3
Michigan	9,090,000	13,519	11,031	149	121	25	25
Minnesota	3,962,000	7,015	5,670	177	143	15	11
Mississippi	2,331,000	2,248	1,916	96	82	50	49
Missouri	4,750,000	7,379	5,787	155	122	22	24
Montana	747,000	915	788	122	105	39	37
Nebraska	1,541,000	2,135	1,734	139	113	31	30

(continued on following page)

Table 8—*Continued*

State	Civilian Population (7-1-76)	Non-Federal Physicians (12-31-76)		Physicians Per 100,000 Population		Rank of Physician-Population Ratio By State	
		Total	Patient Care	Total	Patient Care	Total	Patient Care
Nevada	600,000	778	653	130	109	37	33
New Hampshire	818,000	1,374	1,104	168	135	19	19
New Jersey	7,306,000	13,107	10,402	179	142	13	12
New Mexico	1,152,000	1,586	1,224	138	106	34	36
New York	18,057,000	46,614	35,786	258	198	2	2
North Carolina	5,370,000	7,403	6,013	138	112	33	31
North Dakota	631,000	725	608	115	96	44	43
Ohio	10,675,000	16,201	13,326	152	125	24	22
Oklahoma	2,734,000	3,223	2,703	118	99	42	41
Oregon	2,326,000	4,134	3,278	178	141	14	13
Pennsylvania	11,852,000	20,619	16,640	174	140	16	15
Rhode Island	922,000	1,822	1,494	198	162	8	7
South Carolina	2,778,000	3,304	2,643	119	95	41	44
South Dakota	680,000	631	529	93	78	51	51

(continued on following page)

Table 8—*Continued*

State	Civilian Population (7-1-76)	Non-Federal Physicians (12-31-76)		Physicians Per 100,000 Population		Rank of Physician-Population Ratio By State	
		Total	Patient Care	Total	Patient Care	Total	Patient Care
Tennessee	4,193,000	6,108	4,923	146	117	26	26
Texas	12,331,000	17,309	13,968	140	113	30	28
Utah	1,223,000	1,971	1,634	161	134	20	20
Vermont	476,000	1,031	769	217	162	7	8
Virginia	4,887,000	7,541	5,980	154	122	23	23
Washington	3,556,000	6,163	4,890	173	138	17	17
West Virginia	1,820,000	2,389	1,885	131	104	35	39
Wisconsin	4,607,000	6,512	5,401	141	117	27	27
Wyoming	386,000	423	348	110	90	45	46

Source: Goodman, Louis J.: Physician Distribution and Medical Licensure in the U. S., 1976. Chicago, Center for Health Services Research and Development, American Medical Association, 1977.

Table 9—Non-Federal Physicians, Civilian Population and Physician-Population Ratios, 1968 to 1976

Year	Civilian Population As of January 1 Following Year	Non-Federal Physicians As Of December 31		Physicians Per 100,000 Population	
		Total	Patient Care	Total	Patient Care
1968	198,287,000	282,831	236,460	143	119
1969	200,466,000	290,942	245,368	145	122
1970	203,109,000	298,745	252,778	147	124
1971	205,496,000	309,685	261,335	151	127
1972	207,306,000	322,836	266,587	156	129
1973	208,951,000	331,070	270,412	158	129
1974	210,555,000	342,611	276,070	163	131
1975	212,308,000	356,560	285,345	168	134
1976	213,889,000	369,794	292,152	173	137

Source: Physician data from various issues of Distribution of Physicians, and Physician Distribution and Medical Licensure in the U. S., Chicago, Center for Health Services Research and Development, American Medical Association. Population data from U. S. Bureau of The Census, Current Population Reports, Series P-25, No. 706, "Estimates of the Population of the United States and Components of Change: 1940 to 1976," U. S. Government Printing Office, Washington, D. C. 1977.

Table II—Distribution of Physicians by Specialty of the Sample Population and the Respondents to the Eleventh Periodic Survey of Physicians

	Percent Distribution by Specialty			
	Population		Respondents[a]	
Specialty Group	N	%	N	%
GP & FP	43,891	21.7	1,127	21.4
IM	35,702	17.6	894	17.0
SURG	49,023	24.2	1,265	24.1
PED	12,630	6.2	332	6.3
OBG	14,854	7.3	375	7.1
RAD	9,109	4.5	240	4.6
PSYCH	13,053	6.4	405	7.7
ANES	8,521	4.2	217	4.1
OTHER	15,725	7.8	401	7.6
TOTAL	202,508	100.0	5,256	100.0

[a] Excludes 74 cases for which specialty was unknown.

Table III—Distribution of Physicians by Census Division of the Sample Population and the Respondents to the Eleventh Periodic Survey of Physicians

Census Division	Population N	Population %	Respondents[a] N	Respondents[a] %
Possessions	1,459	0.7	32	0.6
New England	13,586	6.7	324	6.1
Middle Atlantic	39,657	19.6	1,020	19.2
East North Central	33,872	16.7	910	17.1
West North Central	13,325	6.6	377	7.1
South Atlantic	30,009	14.8	784	14.7
East South Central	9,688	4.8	231	4.3
West South Central	16,539	8.2	425	8.0
Mountain	9,255	4.6	275	5.2
Pacific	35,118	17.3	948	17.8
TOTAL	202,508	100.0	5,326	100.0

Percent Distribution by Census Division

[a] Excludes 4 cases for which address was unknown.

The Periodic Survey of Physicians: Design and Methodology *by Sharon R. Henderson**

INTRODUCTION

In 1966, the AMA's Department of Survey Research (now the Center for Health Services Research and Development) initiated the first annual Periodic Survey of Physicians (PSP). The primary objective of the survey was to collect information on the work patterns and practice characteristics of practicing physicians throughout the United States. Over the following eleven year period, the PSP has been conducted on essentially an annual basis with the most recent survey (PSP12) now in progress.

Originating as primarily a descriptive tool, the PSP has evolved into a complex economic research instrument and a unique data source for many types of research in the health care field. Data from the PSP have provided the basis for numerous studies involving the organization of health care, the financial aspects of medical practice, the utilization of physicians' services, and trends in physician productivity. In addition, results from PSP surveys have been widely disseminated through the Profile of Medical Practice series to physicians, health educators, legislators, economic researchers, journalists, students, and to many others with an interest in the socioeconomics of medical practice.

The intent of this paper is to provide a detailed description of the current survey procedures including the design of the survey as well as the data-gathering and data-processing activities. Some frequently misinterpreted terms (e.g., primary specialty, office-based) will also be clarified.

SURVEY DESIGN

Survey Objectives

The PSP is designed to meet the following general research objectives:

a. to provide a descriptive profile of the office-based physician population in terms of both economic and practice characteristics.

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b. to obtain statistically reliable estimates of such characteristics by specialty and type of practice at both the national level and the level of geographic census division; and

c. to provide a research data base for both longitudinal and cross-sectional statistical analysis.

Survey Population

The AMA Physician Masterfile contains current and historical information on every known physician in the United States including members and non-menbers of the AMA, American medical graduates practicing in this country and overseas, and foreign medical graduates practicing in this country. Each physician's record is updated throughout his career by a triennial census. In addition, a computerized, weekly updating system derives input from AMA mailings, physician correspondence, hospitals, government agencies, specialty boards and licensing agencies. The AMA monitors the inclusion of all variables in the Masterfile, conducts an ongoing quality control program for data updates, and undertakes activities to certify the validity and reliability of the data contained in the file. Moreover, a number of checks to substantiate the overall reliability of the Masterfile have been performed by many outside organizations. (See References)

The PSP physician population constitutes a subset of the AMA Physician Masterfile. It is constructed by excluding the following physicians from the Masterfile:

a. federally-employed physicians;
b. non office-based physicians;
c. doctors of osteopathy;
d. physicians who are deceased or inactive;
e. graduates of foreign medical schools who are only temporarily licensed to practice in the U.S.;
f. physicians currently residing in the U.S. possessions or abroad;
g. physicians for whom no current address is available; and
h. physicians who were included in the sample for the preceding PSP.

Definition of Terms

1. Specialty. The specialty classification of a physician on the AMA Physician Masterfile is determined on the basis of the number of hours each physician indicates that he practices in given specialties. The specialty in which a physician indicates the greatest number of hours spent per typical week is designated as the physician's primary specialty.

For the PSP, primary specialty designations are grouped into the following nine major specialty categories:

General Practice consisting of General and Family Practitioners only;
Internal Medicine consisting of specialists in Internal Medicine and the sub-specialties of Allergy, Cardiovascular Disease, Gastroenterology, and Pulmonary Disease;
Surgery consisting of specialists in General Surgery, Neurological Surgery, Ophthalmology, Orthopedic Surgery, Otolaryngology, Plastic Surgery, Colon and Rectal Surgery, Thoracic Surgery, and Urology;
Pediatrics consisting of specialists in Pediatrics and sub-specialties of Pediatric Allergy and Pediatric Cardiology;
Obstetrics and Gynecology;
Radiology consisting of specialists in Radiology, Diagnostic Radiology, and Therapeutic Radiology;
Psychiatry consisting of specialists in Psychiatry and Child Psychiatry;
Anesthesiology; and
Other consisting of specialists in Dermatology, Neurology, Occupational Medicine, Pathology, Physical Medicine and Rehabilitation, Forensic Pathology, Aerospace Medicine, Public Health, and General Preventive Medicine, as well as physicians practicing in other or unspecified specialties.

2. Office-Based. The activity classification of a physician on the AMA Physician Masterfile is determined on the basis of the number of hours a physician spends per typical week in designated categories reflecting both type of practice (patient care, teaching, administration, research, etc.) and present employment status (solo, partnership, or group practice; medical school; hospital; or government, etc.). Such categories are intended to designate actual physician activity rather than the physical location of where the hours were spent.

A physician who spends the greatest proportion of his hours per typical week involved in direct patient care[1] in either solo practice, a partnership, a group or non-group arrangement with other physicians, or in local, state, or federal government (non-hospital) is classified as a patient-care, office-based physician. Under such a classification scheme, radiologists, anesthesiologists, and pathologists who are primarily involved in direct patient care and are non hospital-employed are classified as office-based physicians even though most of their time may be spent in a hospital location. Physicians who are classified as patient-care, hospital-based physicians, on the other hand, include residents (all years) as well as physicians who spend the greatest proportion of their time involved in patient-care activities as hospital employees (including both non-governmental and governmental hospitals).

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[1] Direct patient care means seeing patients; however, it also includes patient services by such physicians as pathologists and radiologists.

Sample Design

From the beginning, the PSP has been based on a sample of physicians randomly selected from the AMA Physician Masterfile. Although the sample designs have varied somewhat over the years to correspond with specific research objectives, the annual surveys have always included a representative sample of non-federal, office-based physicians engaged in active medical practice in the United States. The annual PSP is currently based on a single-stage, stratified sample with systematic selection from the AMA Physician Masterfile.

A single-stage sample is one in which the final sample is selected directly from the entire population. This type of sample is appropriate for the PSP because a list of physicians is readily available from the AMA Physician Masterfile. Alternatively, in more complex sample situations in which population lists are not available, it is sometimes advantageous to select an initial larger sample and then to utilize information obtained in the first sample to improve the selection of a final sample. Such sampling procedures are referred to as multi-stage sampling.

Stratified sampling designates a sample design in which selections are made from mutually exclusive and exhaustive strata defined from the population. In the PSP, the strata are defined by the nine major specialty categories previously described. In unstratified sampling, on the other hand, the sampling units are selected directly from the entire population. Stratification is used in the PSP to increase the precision of the final estimates and to provide estimates for the subpopulations (i.e., specialties).

Systematic selection is a sampling process in which the population consists of a list of sample units, and selection is made on the basis of a pre-specified interval, i.e., every kth sampling unit on the list is selected for the sample. The principal advantage of systematic sampling is its simplicity. The main problems associated with the procedure result if there are departures from randomness in the ordering of the units on the population list in the form of either periodic fluctuations or a monotonic trend. Randomizing the population ordering by a thorough sorting or shuffling procedure not only eliminates the occurence of such problems but also makes the systematic sample essentially equivalent to a simple random sample. For this reason, a random sort of the PSP population file routinely precedes the systematic selection of the PSP sample.

The number of physicians included in the PSP sample from each stratum (i.e., specialty category) is proportional to the size of the stratum in the PSP population. Proportional allocation is particularly advantageous because every sample unit (physician) in the population has an equal probability of selection. An anesthesiologist, for example, has the same probability of selection as a general practitioner even though there are approximately five times as many general practitioners as anesthesiologists in the PSP population. While, in some instances, samples selected with unequal probabilities of selection may be the optimal design, such samples must ordinarily be compensated for by complex weighing procedures in the final analysis. A sample selected with proportional allocation, on the other hand, leads to self-weighting samples.

The annual PSP sample represents approximately five percent of the entire non-federal, office-based physician population, or roughly 10,000 physicians. Determination of the PSP sample size is based primarily on the expected rate of response and the desired precision for the population estimates.

Questionnaire Design

The PSP survey instrument is a mailed, self-administered questionnaire. An introductory letter explaining the purposes of the survey, assuring confidentiality, and encouraging participation is imprinted on the first page of the questionnaire. The remaining three pages are devoted to close-ended, pre-coded questions. To provide confidentiality during the processing of the questionnaires, the physician's name and address are computer-printed on a tear-off portion of the lower part of the last page of the questionnaire. A physician identification number is also computer-printed on the last page of the questionnaire directly above the tear-off portion. A prepaid business reply envelope is mailed with the questionnaire for the physician's convenience in replying.

The PSP questionnaire is designed to include two distinct sections: (1) a fixed portion which is subject to only minor revisions from year to year; and (2) a variable (or research portion) which is completely revised from one annual survey to another. Included in the fixed portion are questions concerning physicians' practice characteristics, their work patterns (hours worked, patient visits provided), and economic information including fees, incomes, and professional expenses. The research portion, on the other hand, has dealt with such topics as professional liability, allied health personnel, and physicians' hospital affiliations. All new questions as well as modifications to existing questions are subject to review and approval by a standing committee.

A pilot test of the survey questionnaire is conducted prior to each annual survey. The primary objective of the pilot test is to evaluate new or modified questions in terms of clarity, meaningfulness, and rate of response. The conduct of the pilot survey is identical to the annual survey except on a smaller scale. Pilot questionnaires are mailed to a representative sample of approximately 500 physicians. Responses to the pilot test are edited, coded, and tabulated, and the results are reviewed to determine the necessity for questionnaire revisions.

DATA-GATHERING

Data Collection Method

The PSP data collection activity is initiated with the computerized selection of the sample. Frequency distributions for the PSP population and the sample are then compared on the basis of major specialty category, age, sex, and geographic location (census division). Appropriate statistical tests are performed in order to compare the representativeness of the sample to the population on the basis of these four variables. If significant deviation is observed, the entire sampling process is repeated.

Once the sample is determined to be representative, a computerized log of data-collection activity is begun. The following information is included on the log for each physician in the sample.

a. physician identification code;
b. date of initial mailing;
c. dates of follow-up mailings;
d. response code; and
e. date of response.

The questionnaires are computer-addressed, machine-folded and inserted into standard window envelopes for first-class mailing.

Upon receipt of the returned questionnaires, the computerized log is updated with the appropriate information. Follow-up mailings to all non-respondents are conducted at approximately monthly intervals. As many as five follow-up mailings may be conducted during the course of the survey.

Survey Response

The PSP response rate is calculated by dividing the number of questionnaires received from eligible physicians by the number of eligible physicians included in the sample. Examples of ineligibility include death, prolonged inactivity due to major illness or retirement, change in employment status (federal employment, non office-based), or relocation outside of the United States.

Although response rates have been decreasing somewhat since 1966, the rates appear to have leveled off near 50 percent over the last several years. Extensive efforts have been made to improve survey response including follow-up mailings, shorter questionnaire forms, assurances of confidentiality, and signed cover letters explaining the purposes of the survey and the importance of participation. Other factors which can neither be controlled for nor measured have undoubtedly had a significant impact on the rate of response to surveys of this type. Such factors include the sensitivity of the information being sought (fees, expenses, incomes), the increasing number of surveys of a similar type all seeking information from the physician population; and a growing distrust for computerized data banks with presumably unlimited potential for linkage of one with another.

Inasmuch as only one physician out of two responds to the survey as well as the fact that not all respondents complete every question, there is a potential for bias due to non-response in the survey results. In the past, efforts have been undertaken to assess the extent of the potential bias by comparing the respondents with the non-respondents on the basis of known demographic information (specialty, age, sex, and geographic location). While the differences have appeared to be minimal, research efforts are now underway to examine these potential biases in a more detailed and sophisticated manner. Such research may result in the implementation of a differential weighting scheme to adjust for the effects of both total and item non-response.

DATA PROCESSING

Preliminary Editing

Extensive efforts are made to minimize the necessity for lengthy editing and coding procedures in the processing of PSP questionnaires. The questions included on the questionnaire are intentionally designed to be close-ended, straight forward, and pre-coded for precisely this reason. In addition, keypunching column numbers are imprinted on the questionnaire to facilitate data processing.

The preliminary editing procedures are limited to a review of all returned questionnaires for the following purposes: (1) to determine the respondent's eligibility for inclusion; (2) to clarify obvious inconsistencies; and (3) to interpret any responses which may result in keypunching difficulties. Detailed coding manuals as well as training sessions are provided to promote consistency among data editors. Verification of the preliminary editing is provided by a trained supervisor.

Data Entry

Following the preliminary editing and verification procedures, the questionnaires are keypunched onto cards, verified, and entered onto a disk file for further processing. With the implementation of PSP12, data will be entered directly from key to disk with the added advantage of automatic range checking and editing at the time of data entry.

Machine Editing

Computerized editing of the PSP raw data file includes the following procedures:

1. checks for the occurence of invalid characters in a field;
2. range-checking of each item; and
3. checks for internal consistency from one item to another.

In each instance in which an error is detected, the case record is verified against the original questionnaire and, if warranted, a correction is made on the PSP raw data file.

File Linkage

The file linkage procedure is the final step in the data processing of the PSP questionnaire data. In an attempt to preserve confidentiality of the physician respondents throughout the entire data processing operation, the only identification that appears on either the returned questionnaires or the PSP raw data file is a computer-generated physician identification code. Information obtained on the log file generated at the time of sample selection provides the necessary link to match physician respondents with existing files containing historical information, geographic information, as well as additional current information regarding employment characteristics and type of practice. Once the necessary links are accomplished, all physician identifying information (names, addresses, medical education numbers, etc.) is erased from the final PSP master record file. Translation of the PSP master record file into an SPSS (Statistical Package for the Social Sciences) file completes the data preparation phase of the survey and facilities data tabulation and analysis.

Confidentiality

As mentioned previously, entensive efforts are made in both the data-collection and data-processing phases of the survey to preserve the confidentiality of all physician respondents. Such efforts include (1) the elimination of the physicians' names and addresses from all documents and data files containing response data; (2) the creation of a computer-generated physician identification code which is meaningful only for file linkage purposes; and (3) the destruction of data files which facilitate linkage upon completion of data processing.

Steps to prevent disclosure of sensitive information are also extended to the analytical and reporting phase of the survey. For instance, tabular information is presented only at major levels of disaggregation (e.g., census division, major specialty category). Tabulations which would result in cells representing only a small number of cases are either avoided entirely or restructured to prevent disclosure. In addition, adequate security is maintained to protect the data file from either inadvertent or unauthorized disclosure.

CONCLUSIONS

The Periodic Survey of Physicians (PSP) exemplifies a long-term commitment on the part of the American Medical Association to obtain valid and reliable information on the current practice of medicine in the United States. The survey procedures described in this paper are the outgrowth of over a decade of experience in the application of survey methodology to the field of medical practice. The most critical factor in the success of the PSP in the years ahead will be the continued support of the medical profession. Such support can only be achieved by a clear demonstration of the relevance of the information being sought, an uncompromising respect for the respondents' privacy, and a total commitment to the accuracy of the results.

References

Committee to Evaluate the National Center for Health Statistics: Subcommittee on Statistical Methodology, Report on AMA Physician File Study. (SR-16), Washington, D.C.: September, 1972.

Cherkin, Dan and David Lawrence. "An Evaluation of the American Medical Association's Physician Masterfile as a Data Source — One State's Experience." Medical Care 15 (September, 1977): 767-779.

"How Good is the American Medical Association Masterfile of Physicians?" Medical Marketing and Media (December 12, 1976): 15-17.

Lee, Edgar, et al. Physician Demography in Ohio -- 1971. Columbus, Ohio: Board of Regents, 1973.

Physicians' Work Patterns

The average physician in office practice worked 47.2 weeks in 1975.

- General practitioners, radiologists, and psychiatrists worked the most number of weeks in 1975 (47.4 weeks).
- The larger the number of physicians in the practice, the fewer weeks worked by the physician, in general. The average physician in a two man group worked 47.5 weeks, while a physician in a 26 man and over group worked 46.5 weeks.
- The average physician in the West North Central census division worked the most number of weeks (47.5 weeks).

The typical physician practiced medicine 52.2 hours per week in 1976 as compared with 51.8 hours in 1975 and 49.9 hours in 1974. For 1976, the following can be noted:

- The average specialist in internal medicine worked the longest week (55.7 hours).
- The average physician in a two or three man group worked the longest week (54.3 hours).
- The average physician in a metropolitan area with a population of at least one million persons worked a shorter week (51.1 hours) than the average physician in a nonmetropolitan area (53.5 hours).

In 1976, the average physician spent 5.0 hours per week in business administration activities.

- The average specialist in internal medicine spent the most time on business administration (5.4 hours per week) and radiologists and anesthesiologists spent the least (3.7 hours per week).
- The average physician in a group practice with at least 26 physicians spent the most time on business administration (5.7 hours per week) while the average physician in a group with 5 to 7 physicians spent the least (4.1 hours per week).

The average physician had 128.5 patient visits per week in 1976 as compared with 126.5 in 1975 and 125.8 in 1974. For 1976, the following comments can be made:

- The average radiologist experienced the most patient visits per week (207.1).

- In general, the larger the number of physicians in the group, the fewer patient visits the average physician had per week. The average physician in a two man group had 206.7 visits per week while the average physician in a group with at least 26 physicians had 126.6 visits per week.

- The average physician in a nonmetropolitan area had 162.8 patient visits per week as compared with 113.1 for the average physician in a metropolitan area with a population of at least one million persons.

In 1976, the average patient had to wait 8.3 days for an appointment, and 22.4 minutes in the physicians' office for the scheduled appointment.

Table 11—Average Number of Weeks Practiced per Year by Type of Practice and Specialty, 1975

Type of Practice	Total		Specialty							
	N	Mean	Gen. Prac. (N=1107)	Int. Med. (N=883)	Surg. (N=1249)	Ped. (N=329)	Ob. Gyn. (N=372)	Rad. (N=239)	Psych. (N=402)	Anes. (N=217)
			Mean							
Total[a]	5261	47.2	47.4	47.2	46.9	47.3	47.3	47.4	47.4	46.2
Solo	2641	47.3	47.6	47.5	47.0	46.8	47.4	49.5	47.4	46.1
2 Man	505	47.5	47.5	47.4	47.0	48.9	48.3	49.0	47.3	47.5
3 Man	356	47.3	48.7	47.8	46.7	47.9	46.5	46.1	47.5	44.5
4 Man	231	46.9	47.0	46.6	47.4	46.4	45.8	47.6	47.6	47.6
5-7 Man	305	46.3	46.9	47.2	46.5	47.6	44.7	46.8	45.2	46.6
8-25 Man	275	47.0	46.6	47.2	46.7	47.3	48.5	46.6	47.4	45.5
26 Man & Over	222	46.5	45.7	46.1	46.1	46.5	46.9	47.6	48.7	46.9
		Standard Error Of the Mean								
Total		.068	.151	.183	.133	.298	.244	.205	.186	.306
Solo		.099	.190	.239	.194	.635	.378	.506	.206	.542
2 Man		.216	.546	.694	.338	.464	.383	.417	1.514	.789
3 Man		.217	.340	.303	.453	.337	.756	1.015	.827	1.708
4 Man		.342	.617	1.695	.325	1.546	1.615	.331	.984	.653
5-7 Man		.274	.697	.186	.455	.532	1.405	.425	1.557	.515
8-25 Man		.233	1.089	.185	.529	.678	.533	.416	.709	.824
26 Man & Over		.307	1.434	.617	.506	1.546	.545	.801	1.116	1.124

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 10—Average Number of Weeks Practiced per Year by Specialty, 1969-1970, 1972-1975

Specialty	Year 1969 (n = 4381)	1970 (n = 4226)	1972 (n = 4439)	1973 (n = 4878)	1974 (n = 5211)	1975 (n = 5261)
Total[a]	48.0	47.5	47.2	47.2	47.2	47.2
General Practice	48.1	48.1	47.7	47.4	47.4	47.4
Internal Medicine	47.8	47.2	47.2	47.1	47.3	47.2
Surgery	47.8	47.4	46.8	46.9	47.2	46.9
Pediatrics	48.2	48.1	47.4	47.5	47.6	47.3
Obstetrics-Gynecology	48.6	48.0	47.5	47.7	47.4	47.3
Radiology	48.4	49.0	47.1	47.1	46.7	47.4
Psychiatry	47.9	46.2	47.4	47.4	47.4	47.4
Anesthesiology	47.5	46.1	46.2	46.9	46.5	46.2

[a] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

Source: Periodic Survey of Physicians, 1970-1977. Center for Health Services Research and Development, American Medical Association.

Table 12—Average Number of Weeks Practiced per Year by Census Division and Specialty, 1975

	Total		Specialty							
Census Division	N	Mean	Gen. Prac. (N=1107)	Int. Med. (N=883)	Surg. (N=1249)	Ped. (N=329)	Ob. Gyn. (N=372)	Rad. (N=239)	Psych. (N=402)	Anes. (N=217)
			Mean							
Total[a]	5,261	47.2	47.4	47.2	46.9	47.3	47.3	47.4	47.4	46.2
New England	322	47.2	47.1	47.5	47.2	47.7	48.7	47.6	45.1	47.1
Mid. Atlantic	1,008	47.0	47.9	46.5	46.7	47.6	47.5	47.6	47.0	46.5
E. N. Central	903	46.4	46.5	46.3	46.7	46.3	45.8	46.6	46.1	46.1
W. N. Central	373	47.5	48.0	47.9	46.7	48.3	47.6	47.9	48.2	46.5
South Atlantic	763	47.6	47.9	48.0	47.6	48.3	47.0	47.1	48.3	43.8
E. S. Central	224	47.1	47.9	48.2	45.7	46.1	47.8	47.8	48.7	47.0
W. S. Central	422	47.4	48.8	47.0	46.6	45.1	48.1	48.4	47.6	47.5
Mountain	272	47.3	46.6	49.0	46.9	48.1	47.5	46.8	48.5	48.1
Pacific	939	47.4	47.3	47.6	47.1	47.4	47.5	47.4	48.4	45.8
		Standard Error of the Mean								
Total		.068	.151	.183	.133	.298	.244	.205	.186	.306
New England		.221	.550	.297	.462	.941	.473	.500	.819	1.433
Mid. Atlantic		.161	.350	.527	.284	.419	.558	.637	.331	.631
E. N. Central		.184	.381	.549	.252	1.066	.940	.449	.713	.473
W. N. Central		.209	.264	.319	.588	.527	.663	.882	.863	.606
South Atlantic		.166	.409	.277	.343	.457	.472	.663	.228	1.698
E. S. Central		.368	.793	.488	.838	1.760	.759	.930	.714	1.116
W. S. Central		.292	.415	.795	.673	2.156	.561	.526	.699	1.215
Mountain		.265	.726	.392	.424	1.637	.728	.641	.455	.560
Pacific		.148	.389	.422	.267	.606	.532	.399	.330	.689

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 13—Average Number of Weeks Practiced per Year by Specialty and Location, 1975

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(n = 823)	Less than 1,000,000[b] (n = 1830)	1,000,000 and over[c] (n = 2579)
Specialty	N	Mean		Mean	
Total[a]	5,261	47.2	47.2	47.2	47.1
General Practice	1,107	47.4	47.3	47.6	47.5
Internal Medicine	883	47.2	46.9	47.6	47.1
Surgery	1,249	46.9	46.7	46.7	47.1
Pediatrics	329	47.3	47.8	47.3	47.2
Obstetrics-Gynecology	372	47.3	47.0	47.2	47.4
Radiology	239	47.4	48.0	47.5	47.1
Psychiatry	402	47.4	48.4	47.5	47.2
Anesthesiology	217	46.2	47.9	46.0	46.0
		Standard Error of the Mean			
Total		.068	.191	.113	.096
General Practice		.151	.293	.272	.230
Internal Medicine		.183	.637	.246	.270
Surgery		.133	.475	.221	.165
Pediatrics		.298	.641	.659	.343
Obstetrics-Gynecology		.244	1.117	.316	.345
Radiology		.205	.396	.344	.318
Psychiatry		.186	.590	.406	.220
Anesthesiology		.306	.578	.661	.381

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 14—Average Number of Hours Practiced per Week by Specialty 1970-71, 1973-1976

Specialty	Year 1970 (n=4258)	1971 (n=4064)	1973 (n=4263)	1974 (n=4875)	1975 (n=5253)	1976 (n=5286)
Total[a]	51.4	53.6	50.8	49.9	51.8	52.2
General Practice	52.1	54.1	51.1	49.7	52.2	51.4
Internal Medicine	51.6	55.2	52.7	51.7	53.6	55.7
Surgery	53.2	54.6	52.4	51.9	53.7	54.4
Pediatrics	51.7	54.2	49.3	48.4	50.0	49.8
Obstetrics-Gynecology	55.1	59.1	52.3	52.9	54.9	54.3
Radiology	47.4	48.7	47.3	47.6	45.9	48.4
Psychiatry	47.1	45.1	46.7	44.1	46.7	48.1
Anesthesiology	53.2	54.4	52.1	48.9	50.7	51.1

[a] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

Source: Periodic Survey of Physicians, 1970-1976. Center for Health Services Research and Development, American Medical Association.

Table 15—Average Number of Hours Practiced per Week by Type of Practice and Specialty, 1976

Type of Practice	Total N	Total Mean	Gen. Prac. (N=1116)	Int. Med. (N=889)	Surg. (N=1256)	Ped. (N=331)	Ob. Gyn. (N=370)	Rad. (N=240)	Psych. (N=404)	Anes. (N=214)
			Mean							
Total[a]	5,286	52.2	51.4	55.7	54.4	49.8	54.3	48.4	48.1	51.1
Solo	2,656	51.2	50.8	54.0	53.1	49.0	51.8	49.2	48.3	49.3
2 Man	506	54.3	54.0	57.4	54.5	57.0	57.0	49.1	46.4	52.1
3 Man	360	54.3	56.5	59.8	56.7	51.2	54.6	47.6	48.8	50.0
4 Man	232	53.8	52.5	61.1	53.9	50.2	57.7	52.7	51.2	51.9
5-7 Man	305	52.2	52.2	55.7	57.0	49.4	50.6	46.1	50.2	50.2
8-25 Man	273	51.2	46.0	55.7	53.0	45.8	50.3	49.7	43.5	55.3
26 Man & Over	222	52.4	44.9	55.8	55.4	46.8	55.2	46.5	47.5	56.2
			Standard Error of the Mean							
Total		.204	.455	.479	.419	.782	.890	.583	.674	.920
Solo		.305	.588	.741	.611	1.322	1.464	1.930	.858	1.612
2 Man		.561	1.343	1.325	.939	2.199	2.535	1.723	2.454	3.900
3 Man		.666	2.203	1.605	1.338	1.593	1.714	1.665	2.599	5.401
4 Man		.862	1.888	2.580	1.726	3.616	3.049	1.693	3.875	2.702
5-7 Man		.759	1.870	.485	1.815	3.067	3.821	1.453	2.734	1.888
8-25 Man		.846	2.560	.484	2.113	2.261	3.255	1.006	3.254	1.881
26 Man & Over		.837	1.784	1.345	1.900	2.769	4.099	1.729	2.941	3.643

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 16—Average Number of Hours Practiced per Week by Census Division and Specialty, 1976

			Specialty							
	Total		Gen. Prac. (N=1116)	Int. Med. (N=889)	Surg. (N=1256)	Ped. (N=331)	Ob. Gyn. (N=370)	Rad. (N=240)	Psych. (N=404)	Anes. (N=214)
Census Division	N	Mean	Mean							
Total[a]	5,286	52.2	51.4	55.7	54.4	49.8	54.3	48.4	48.1	51.1
New England	322	52.4	54.8	56.8	57.3	48.6	49.5	47.5	42.7	51.5
Mid Atlantic	1,012	51.2	48.8	53.9	53.6	48.8	54.2	45.7	47.6	52.1
E. N. Central	904	52.1	51.3	55.5	55.3	47.8	52.9	49.0	52.3	47.2
W. N. Central	373	54.4	56.9	54.0	54.8	54.2	57.7	50.2	46.1	51.6
South Atlantic	777	53.4	49.8	58.2	57.0	49.5	56.6	46.3	49.0	52.8
E. S. Central	227	54.6	53.0	54.7	55.9	50.5	60.5	49.8	55.0	48.9
W. S. Central	420	54.6	55.4	57.5	55.5	53.6	57.1	49.2	50.3	50.9
Mountain	273	52.2	50.5	58.1	53.3	52.2	52.7	50.5	48.2	56.5
Pacific	942	50.1	48.8	54.6	51.1	49.3	50.3	49.1	45.5	51.9
		Standard Error of the Mean								
Total		.204	.455	.479	.419	.782	.890	.583	.674	.920
New England		.854	2.188	1.518	1.700	2.863	3.449	3.109	3.036	4.425
Mid Atlantic		.490	1.343	1.085	1.011	1.697	1.871	2.198	1.305	2.036
E. N. Central		.495	.927	1.179	1.145	2.305	2.028	1.047	1.663	2.617
W. N. Central		.768	1.546	1.854	1.672	3.441	3.040	2.024	3.249	2.132
South Atlantic		.546	1.217	1.080	1.205	1.603	2.377	1.266	1.721	2.249
E. S. Central		.855	1.923	2.937	1.313	3.616	3.702	2.205	2.673	2.949
W. S. Central		.689	1.542	1.810	1.315	3.188	3.541	1.830	2.266	4.307
Mountain		.870	1.613	2.810	1.642	5.517	3.847	2.633	2.414	3.267
Pacific		.446	1.016	1.162	.852	1.673	2.140	1.159	1.564	1.938

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 17—Average Number of Hours Practiced per Week by Specialty and Location, 1976

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(N=828)	Less than 1,000,000[b] (n=1841)	1,000,000 and over[c] (n=2587)
Specialty	N	Mean	Mean		
Total[a]	5,286	52.2	53.5	53.3	51.1
General Practice	1,116	51.4	54.5	52.3	48.4
Internal Medicine	889	55.7	54.4	56.8	55.3
Surgery	1,256	54.4	55.8	54.7	53.8
Pediatrics	331	49.8	52.2	52.8	47.6
Obstetrics-Gynecology	370	54.3	55.3	56.5	52.0
Radiology	240	48.4	46.0	49.4	48.5
Psychiatry	404	48.1	47.0	49.6	47.5
Anesthesiology	214	51.1	48.3	51.8	51.4
		Standard Error of the Mean			
Total		.204	.516	.339	.292
General Practice		.455	.780	.857	.710
Internal Medicine		.479	1.547	.792	.656
Surgery		.419	1.390	.636	.598
Pediatrics		.782	2.101	1.315	1.066
Obstetrics-Gynecology		.890	2.313	1.402	1.288
Radiology		.583	1.386	.821	.981
Psychiatry		.674	2.525	1.342	.820
Anesthesiology		.920	2.565	1.645	1.255

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians, November 1976. Center for Health Services Research and Development, American Medical Association.

Table 18—Average Number of Hours of Direct Patient Care per Week by Specialty, 1970-71, 1973-1976

Specialty	Year 1970 (n=4374)	1971 (n=3478)	1973 (n=4215)	1974 (n=4796)	1975 (n=5246)	1976 (n=5203)
Total[a]	44.7	46.3	46.1	44.5	47.5	46.5
General Practice	47.7	49.6	47.6	45.5	49.0	46.5
Internal Medicine	45.5	49.7	47.5	46.2	49.2	49.3
Surgery	47.2	44.3	47.8	46.3	48.9	47.9
Pediatrics	45.9	48.5	44.5	44.2	46.1	44.9
Obstetrics-Gynecology	49.9	46.6	48.8	48.1	51.6	49.4
Radiology	34.5	40.1	41.8	41.4	41.9	44.5
Psychiatry	37.3	38.6	40.3	37.3	41.0	41.3
Anesthesiology	46.8	43.9	48.0	44.7	47.2	47.2

[a] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

Source: Periodic Survey of Physicians, 1970-1976. Center for Health Services Research and Development, American Medical Association.

Table 19—Average Number of Hours of Direct Patient Care per Week by Type of Practice and Specialty, 1976

	Total		Specialty							
Type of Practice	N	Mean	Gen. Prac. (N=1105)	Int. Med. (N=877)	Surg. (N=1234)	Ped. (N=324)	Ob. Gyn. (N=366)	Rad. (N=235)	Psych. (N=396)	Anes. (N=213)
			Mean							
Total[a]	5,203	46.5	46.5	49.3	47.9	44.9	49.4	44.5	41.3	47.2
Solo	2,610	45.7	45.8	47.9	46.6	44.3	46.3	46.8	43.0	45.9
2 Man	503	48.7	49.2	50.8	48.7	51.7	52.6	44.2	40.5	50.7
3 Man	355	49.1	49.5	52.8	52.4	48.3	50.9	42.6	42.4	43.5
4 Man	228	49.0	48.8	56.1	47.0	44.9	54.5	50.1	46.1	49.4
5-7 Man	305	47.0	48.3	49.4	52.0	45.1	44.3	43.5	44.4	47.1
8-25 Man	268	45.0	42.4	49.4	45.7	42.4	44.5	45.1	33.3	50.6
26 Man & Over	221	44.9	41.8	46.6	45.4	43.0	54.1	41.0	35.0	45.8
			Standard Error of the Mean							
Total		.205	.451	.496	.406	.740	.898	.651	.670	.872
Solo		.301	.593	.747	.594	1.270	1.431	2.169	.783	1.460
2 Man		.595	1.258	1.454	1.056	2.011	2.327	2.479	2.466	3.640
3 Man		.716	2.361	1.934	1.344	1.577	1.901	1.612	3.434	2.363
4 Man		.877	1.532	2.838	1.559	3.633	3.078	1.852	4.814	2.758
5-7 Man		.733	1.739	.500	1.897	2.857	3.222	1.360	3.253	1.731
8-25 Man		.843	2.338	.500	1.924	2.105	3.016	1.387	2.616	1.792
26 Man & Over		.871	2.027	1.788	1.602	2.766	3.759	2.232	5.177	6.123

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 20—Average Number of Hours of Direct Patient Care per Week by Census Division and Specialty, 1976

			Specialty							
	Total		Gen. Prac. (N=1105)	Int. Med. (N=877)	Surg. (N=1234)	Ped. (N=324)	Ob. Gyn. (N=366)	Rad. (N=235)	Psych. (N=396)	Anes. (N=213)
Census Division	N	Mean	Mean							
Total[a]	5,203	46.5	46.5	49.3	47.9	44.9	49.4	44.5	41.3	47.2
New England	319	45.7	46.9	49.2	50.4	43.7	43.0	44.9	34.7	46.7
Mid Atlantic	997	45.4	44.7	47.5	46.7	44.3	50.5	39.9	40.8	47.7
E. N. Central	884	45.9	45.9	47.9	48.2	42.7	48.1	42.5	45.4	42.7
W. N. Central	370	48.3	51.2	47.9	48.1	49.3	52.2	46.0	39.5	44.3
South Atlantic	761	47.8	45.6	52.1	50.0	45.6	51.3	43.9	43.1	49.1
E. S. Central	224	49.5	49.7	50.4	49.7	47.6	55.8	43.8	50.6	46.3
W. S. Central	415	49.4	51.2	51.4	50.6	46.1	54.1	47.8	42.3	45.9
Mountain	269	46.4	45.7	52.9	47.5	44.1	47.5	45.6	41.7	52.8
Pacific	930	44.6	44.0	48.7	45.1	44.5	44.7	45.9	38.9	49.4
		Standard Error of the Mean								
Total		.205	.451	.496	.406	.740	.898	.651	.670	.872
New England		.864	2.419	1.699	1.728	2.560	3.490	2.986	2.541	4.025
Mid Atlantic		.497	1.280	1.156	.985	1.719	1.949	2.594	1.335	1.867
E. N. Central		.481	.917	1.193	1.108	2.114	2.019	1.515	1.657	2.212
W. N. Central		.792	1.467	2.008	1.722	3.398	2.660	2.040	3.837	2.994
South Atlantic		.551	1.326	1.135	1.156	1.533	2.234	1.319	1.768	2.405
E. S. Central		.938	2.143	2.432	1.564	3.404	4.002	3.639	4.750	3.131
W. S. Central		.691	1.545	1.831	1.273	2.899	3.406	1.736	1.919	3.426
Mountain		.880	1.485	2.643	1.612	4.926	3.418	2.964	2.419	3.853
Pacific		.447	.977	1.188	.813	1.540	2.397	1.253	1.509	1.876

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians, November 1976. Center for Health Services Research and Development, American Medical Association.

Table 21—Average Number of Hours of Direct Patient Care per Week by Specialty and Location, 1976

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(n = 815)	Less than 1,000,000[b] (n = 1806)	1,000,000 and over[c] (n = 2553)
Specialty	N	Mean	Mean		
Total[a]	5,203	46.5	48.8	47.7	44.8
General Practice	1,105	46.5	49.9	47.5	43.3
Internal Medicine	877	49.3	49.9	51.5	47.9
Surgery	1,234	47.9	50.6	48.6	46.7
Pediatrics	324	44.9	48.2	47.1	42.9
Obstetrics-Gynecology	366	49.4	50.5	51.5	47.5
Radiology	235	44.5	43.0	45.3	44.4
Psychiatry	396	41.3	40.7	41.9	41.1
Anesthesiology	213	47.2	44.3	48.9	47.0
		Standard Error of the Mean			
Total		.205	.516	.344	.292
General Practice		.451	.788	.850	.692
Internal Medicine		.496	1.610	.788	.687
Surgery		.406	1.223	.645	.573
Pediatrics		.740	1.876	1.285	1.001
Obstetrics-Gynecology		.898	2.490	1.422	1.291
Radiology		.651	1.649	.941	1.058
Psychiatry		.670	2.571	1.358	.809
Anesthesiology		.872	2.372	1.604	1.169

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians, November 1976. Center for Health Services Research and Development, American Medical Association.

Table 22—Average Number of Hours per Week Spent in Selected Patient Activities by Specialty, 1976

Specialty	Total Hours		Selected Activities		
			Office Hours (N=5068)	Hospital Rounds (N=4827)	Business Administration Activities (N=4715)
	N	Mean	Mean		
Total[a]	5,286	52.2	29.1	12.5	5.0
General Practice	1,116	51.4	34.9	10.6	4.5
Internal Medicine	889	55.7	29.9	17.0	5.4
Surgery	1,256	54.4	23.7	15.7	5.3
Pediatrics	331	49.8	36.0	8.5	3.8
Obstetrics-Gynecology	370	54.3	28.7	12.7	4.3
Radiology	240	48.4	30.0	4.2	3.7
Psychiatry	404	48.1	33.0	8.1	5.7
Anesthesiology	214	51.1	5.5	11.5	3.7
		Standard Error of the Mean			
Total		.204	.202	.173	.087
General Practice		.455	.359	.295	.150
Internal Medicine		.479	.412	.414	.197
Surgery		.419	.343	.382	.184
Pediatrics		.782	.645	.432	.272
Obstetrics-Gynecology		.890	.554	.604	.231
Radiology		.583	1.448	.868	.334
Psychiatry		.674	.677	.552	.379
Anesthesiology		.920	1.119	.943	.502

[a] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

Source: Eleventh Periodic Survey of Physicians, November 1976. Center for Health Services Research and Development, American Medical Association.

Table 23—Average Number of Hours per Week Spent in Selected Patient Activities by Type of Practice, 1976

Type of Practice	Total Hours		Selected Activities		
			Office Hours (N=5068)	Hospital Rounds (N=4827)	Business Administration Activities (N=4715)
	N	Mean	Mean		
Total[a]	5,286	52.2	29.1	12.5	5.0
Solo	2,656	51.2	30.3	12.2	4.9
2 Man	506	54.3	28.0	15.2	5.2
3 Man	320	53.9	28.3	13.7	4.7
4 Man	232	53.8	28.9	12.2	4.2
5-7 Man	305	52.2	27.1	11.8	4.1
8-25 Man	273	51.2	26.9	11.3	4.8
26 Man & Over	222	52.4	29.0	9.9	5.7
		Standard Error of the Mean			
Total		.204	.202	.173	.087
Solo		.305	.265	.231	.118
2 Man		.561	.615	.595	.253
3 Man		.691	.851	.775	.277
4 Man		.862	1.049	.798	.331
5-7 Man		.759	1.042	.765	.320
8-25 Man		.846	.986	.817	.422
26 Man & Over		.837	.932	.681	.558

[a] Physicians whose types of practices were classified as "Other" or "Not Specified" are included in this total.

Source: Eleventh Periodic Survey of Physicians, November 1976. Center for Health Services Research and Development, American Medical Association.

Table 24—Average Number of Total Patient Visits per Week by Specialty, 1970-71, 1973-1976

	Year					
Specialty	1970 (n=4342)	1971 (n=3860)	1973 (n=3026)	1974 (n=4479)	1975 (n=5151)	1976 (n=4551)
Total[a]	132.5	135.8	137.7	125.8	126.5	128.5
General Practice	172.9	171.5	189.9	174.4	177.2	167.8
Internal Medicine	122.6	127.2	127.2	126.3	124.7	124.3
Surgery	122.2	123.4	129.5	119.6	119.6	122.2
Pediatrics	145.2	163.4	158.1	152.5	140.2	146.1
Obstetrics-Gynecology	132.8	125.6	132.4	130.7	131.8	133.2
Radiology	233.9	199.6	166.8	134.9	138.4	207.1
Psychiatry	54.6	46.5	52.2	46.7	48.3	50.6
Anesthesiology	48.4	57.8	42.6	32.0	33.0	33.8

[a] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

Source: Periodic Survey of Physicians, 1970-1976. Center for Health Services Research and Development, American Medical Association.

Table 25—Average Number of Total Patient Visits per Week by Type of Practice and Specialty, 1976

Type of Practice	Total		Specialty							
			Gen. Prac. (N=1014)	Int. Med. (N=821)	Surg. (N=1180)	Ped. (N=297)	Ob. Gyn. (N=341)	Rad. (N=126)	Psych. (N=324)	Anes. (N=136)
	N	Mean	Mean							
Total[a]	4,551	128.5	167.8	124.3	122.2	146.1	133.2	207.1	50.6	33.8
Solo	2,342	123.5	160.8	123.4	114.3	144.7	117.8	151.6	50.9	31.3
2 Man	452	146.5	206.7	131.2	132.7	172.9	141.8	171.2	65.5	63.2
3 Man	319	151.1	196.5	127.9	142.4	157.4	159.0	299.1	55.6	67.0
4 Man	203	136.9	171.1	126.6	147.2	144.6	140.2	235.4	61.5	30.0
5-7 Man	242	139.6	170.1	125.1	129.7	174.7	119.3	300.7	52.5	31.5
8-25 Man	216	110.5	157.8	125.0	120.1	132.9	121.1	135.7	41.3	27.8
26 Man & Over	192	110.3	126.6	109.6	110.6	122.8	144.9	94.0	62.7	62.2
		Standard Error of the Mean								
Total		1.404	3.025	2.438	2.150	4.721	3.580	23.796	1.545	2.446
Solo		1.738	3.634	3.743	2.818	8.683	5.088	32.139	1.679	3.210
2 Man		4.394	12.029	8.108	6.174	14.766	11.374	42.432	9.488	15.527
3 Man		6.879	15.713	7.848	9.268	12.227	12.069	101.327	11.083	4.359
4 Man		7.138	12.219	11.384	13.484	19.658	13.651	108.018	13.794	6.020
5-7 Man		9.060	13.033	2.460	10.906	20.365	8.870	73.766	7.049	5.194
8-25 Man		5.164	14.725	2.456	9.300	10.851	13.771	24.925	6.795	5.895
26 Man & Over		4.150	7.942	7.557	7.516	7.391	15.841	46.390	27.627	26.572

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 26—Average Number of Total Patient Visits per Week by Census Division and Specialty, 1976

			Specialty							
	Total		Gen. Prac. (N=1014)	Int. Med. (N=821)	Surg. (N=1180)	Ped. (N=297)	Ob. Gyn. (N=341)	Rad. (N=126)	Psych. (N=324)	Anes. (N=136)
Census Division	N	Mean	Mean							
Total[a]	4,551	128.5	167.8	124.3	122.2	146.1	133.2	207.1	50.6	33.8
New England	275	111.7	141.6	105.7	110.7	133.7	115.0	b	38.2	25.9
Mid Atlantic	862	119.1	145.2	118.3	117.2	145.1	128.0	311.8	46.2	33.9
E. N. Central	778	142.4	183.6	147.6	137.7	133.2	139.3	99.5	61.1	40.9
W. N. Central	318	146.0	189.5	127.2	130.5	140.7	155.9	217.5	55.1	24.0
South Atlantic	663	127.0	158.2	123.1	126.4	140.3	122.5	189.6	60.3	27.5
E. S. Central	196	170.3	249.8	148.3	150.2	200.5	177.6	b	64.9	48.0
W. S. Central	370	151.0	203.6	137.4	136.1	159.6	150.3	232.1	50.1	37.0
Mountain	235	116.1	152.7	116.3	104.4	175.1	138.3	90.0	48.0	33.2
Pacific	822	109.5	136.5	111.1	102.0	144.0	125.2	216.2	42.5	31.2
		Standard Error of the Mean								
Total		1.404	3.025	2.438	2.150	4.721	3.580	23.796	1.545	2.446
New England		4.836	11.493	6.209	5.604	13.006	9.356	b	4.474	8.492
Mid Atlantic		3.537	7.855	5.402	5.307	11.532	7.300	115.898	2.001	6.868
E. N. Central		3.488	6.941	7.204	6.508	12.578	10.257	39.347	4.397	8.283
W. N. Central		5.362	8.974	10.655	8.874	10.586	17.133	56.349	10.912	7.649
South Atlantic		3.432	7.887	5.714	6.005	10.338	8.010	62.931	6.042	4.190
E. S. Central		7.927	17.064	16.763	8.337	30.532	19.201	b	11.066	15.498
W. S. Central		5.806	11.311	8.290	6.887	16.179	16.168	79.755	4.781	8.181
Mountain		4.502	9.840	9.589	6.077	24.212	12.191	31.091	6.415	10.030
Pacific		2.655	5.709	4.926	3.901	11.741	8.022	26.562	2.044	3.382

[a] Total includes "Other" and "Not Specified" categories; [b] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 27—Average Number of Total Patient Visits per Week by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
				Less than 1,000,000[b]	1,000,000 and over[c]
	N	Mean	(n = 716)	(n = 1605)	(n = 2204)
			Mean		
Total[a]	4,551	128.5	162.8	134.6	113.1
General Practice	1,014	167.8	191.4	172.2	146.8
Internal Medicine	821	124.3	137.6	131.0	114.8
Surgery	1,180	122.2	151.8	129.5	107.4
Pediatrics	297	146.1	165.6	152.1	137.5
Obstetrics-Gynecology	341	133.2	163.3	141.7	120.0
Radiology	126	207.1	132.0	210.9	235.0
Psychiatry	324	50.6	65.7	55.6	46.8
Anesthesiology	136	33.8	36.4	30.1	35.2
		Standard Error of the Mean			
Total		1.404	3.910	2.338	1.888
General Practice		3.025	5.556	5.836	4.318
Internal Medicine		2.438	10.155	4.086	2.998
Surgery		2.150	8.511	3.201	2.639
Pediatrics		4.721	14.264	7.437	6.615
Obstetrics-Gynecology		3.580	12.852	5.653	4.643
Radiology		23.796	41.702	32.512	45.056
Psychiatry		1.545	10.388	3.184	1.577
Anesthesiology		2.446	6.409	3.976	3.505

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 28—Average Number of Office Visits per Week by Type of Practice and Specialty, 1976

Type of Practice	Total		Specialty							
			Gen. Prac. (N=1079)	Int. Med. (N=845)	Surg. (N=1223)	Ped. (N=319)	Ob. Gyn. (N=355)	Rad. (N=137)	Psych. (N=388)	Anes. (N=138)
	N	Mean	Mean							
Total[a]	4,848	88.3	129.6	73.3	77.2	122.7	100.0	79.8	34.3	3.6
Solo	2,519	89.2	124.5	76.8	77.0	122.0	92.0	109.8	36.3	2.6
2 Man	471	98.1	153.8	75.0	80.8	149.6	110.9	66.1	44.0	b
3 Man	330	97.8	152.3	65.0	78.8	130.5	114.5	104.4	35.7	b
4 Man	214	87.7	131.9	69.1	77.6	121.4	103.5	105.0	34.0	b
5-7 Man	254	84.4	136.8	73.8	73.1	144.9	91.7	50.8	24.3	b
8-25 Man	228	72.6	119.4	73.7	74.6	112.0	95.2	61.4	23.2	b
26 Man & Over	205	77.9	117.6	65.3	70.6	109.9	102.9	108.6	24.5	b
		Standard Error of the Mean								
Total		1.027	2.368	1.637	1.418	3.910	2.562	9.424	.831	1.330
Solo		1.392	2.973	2.504	2.081	7.083	3.938	29.933	.923	2.121
2 Man		3.364	8.558	6.156	4.351	13.279	9.342	17.087	4.648	b
3 Man		3.912	11.403	4.474	4.941	9.390	8.067	30.633	4.634	b
4 Man		4.100	8.197	6.835	4.995	15.200	8.071	36.039	4.043	b
5-7 Man		6.888	10.208	1.653	6.421	17.263	7.482	21.890	4.495	b
8-25 Man		3.883	11.079	1.650	5.969	9.262	11.614	14.929	5.009	b
26 Man & Over		3.365	6.131	4.441	5.253	6.138	9.204	42.113	4.493	b

[a] Total includes "Other" and "Not Specified" categories; [b] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 29—Average Number of Office Visits per Week by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
			(n = 752)	Less than 1,000,000[b] (n = 1681)	1,000,000 and over[c] (n = 2387)
	N	Mean	Mean		
Total[a]	4,848	88.3	116.1	90.9	77.6
General Practice	1,079	129.6	147.7	134.2	113.0
Internal Medicine	845	73.3	92.6	73.4	69.9
Surgery	1,223	77.2	92.2	81.2	69.5
Pediatrics	319	122.7	146.4	125.6	115.9
Obstetrics-Gynecology	355	100.0	114.6	108.2	90.7
Radiology	137	79.8	64.1	99.6	64.4
Psychiatry	388	34.3	32.2	33.6	34.6
Anesthesiology	138	3.6	d	d	5.1
		Standard Error of the Mean			
Total		1.027	2.982	1.704	1.363
General Practice		2.368	4.683	4.298	3.367
Internal Medicine		1.637	6.320	2.727	2.116
Surgery		1.418	4.636	2.240	1.911
Pediatrics		3.910	12.403	6.416	5.262
Obstetrics-Gynecology		2.562	8.049	4.209	3.395
Radiology		9.424	20.921	17.684	10.107
Psychiatry		.831	2.644	1.851	.974
Anesthesiology		1.330	d	d	2.302

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [d] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Physicians' Fees

In 1976, the fee for an initial office visit to a general practitioner was 13.0% higher than in 1975. For other specialties, the percentage increases from 1975 to 1976 were:

- internal medicine--19.8%
- obstetrics-gynecology—16.3%
- surgery—11.9%
- pediatrics--7.8%

The following comments can be made about the pattern of fees for an initial office visit in 1976:

- There was no consistent trend in fee by the number of physicians in the practice.
- The average physician in the Pacific census division charged the highest fee ($28.50), while the average physician in the West North Central and East North Central census divisions charged the lowest fee ($20.70).

The pattern of fees for a follow-up office visit and a follow-up hospital visit in 1976 was essentially the same as for an initial office visit in 1976.

The highest average fee for a periodic examination was charged by physicians in the Pacific census division ($36.67) and the lowest by physicians in the New England census division ($21.67).

Table 30—Average Number of Hospital Visits per Week by Type of Practice and Specialty, 1976

	Total		Specialty							
Type of Practice	N	Mean	Gen. Prac. (N=1022)	Int. Med. (N=832)	Surg. (N=1185)	Ped. (N=300)	Ob. Gyn. (N=343)	Rad. (N=152)	Psych. (N=327)	Anes. (N=180)
			Mean							
Total[a]	4,673	36.8	29.5	44.5	42.1	17.2	29.0	141.9	12.5	31.1
Solo	2,380	28.3	27.3	39.3	34.2	16.5	22.5	33.8	10.3	26.7
2 Man	459	45.3	39.1	53.1	49.6	20.9	30.3	124.1	24.3	80.2
3 Man	326	52.5	33.8	59.2	56.4	20.3	41.7	209.4	17.2	65.3
4 Man	207	48.4	32.3	53.8	65.8	20.6	34.4	b	26.8	27.9
5-7 Man	261	61.3	27.8	44.7	55.7	17.7	23.1	230.4	25.5	31.7
8-25 Man	226	38.5	30.2	44.6	41.3	16.1	25.9	89.1	16.9	22.7
26 Man & Over	196	40.6	18.8	38.4	35.9	10.8	36.7	b	21.2	b
		Standard Error of the Mean								
Total		.969	1.043	1.400	1.433	1.106	1.608	22.227	1.085	2.558
Solo		.700	1.243	1.852	1.634	2.145	1.699	13.454	1.171	2.207
2 Man		2.481	3.969	4.541	4.440	3.179	4.199	35.067	8.127	35.451
3 Man		5.130	4.478	6.180	5.242	2.519	6.030	67.292	8.177	3.544
4 Man		5.486	4.454	8.837	12.336	5.598	6.771	b	11.722	6.162
5-7 Man		7.901	4.835	1.414	8.309	2.926	4.974	58.563	5.406	4.666
8-25 Man		3.344	5.664	1.412	5.500	3.242	4.962	20.861	4.467	3.267
26 Man & Over		10.333	9.371	4.280	4.708	2.919	8.826	b	9.275	b

[a] Total includes "Other" and "Not Specified" categories; [b] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 31—Average Number of Hospital Visits per Week by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
				Less than 1,000,000[b]	1,000,000 and over[c]
			(n = 737)	(n = 1646)	(n = 2263)
	N	Mean	Mean		
Total[a]	4,673	36.8	42.3	40.2	32.7
General Practice	1,022	29.5	35.5	31.1	23.6
Internal Medicine	832	44.5	54.4	50.9	39.3
Surgery	1,185	42.1	52.1	45.2	36.6
Pediatrics	300	17.2	17.7	20.3	15.0
Obstetrics-Gynecology	343	29.0	39.2	30.9	25.4
Radiology	152	141.9	108.1	111.5	195.9
Psychiatry	327	12.5	22.0	18.1	9.1
Anesthesiology	180	31.1	29.1	31.2	31.8
		Standard Error of the Mean			
Total		.969	1.955	1.491	1.548
General Practice		1.043	1.927	2.115	1.371
Internal Medicine		1.400	4.774	2.619	1.706
Surgery		1.433	5.472	2.159	1.879
Pediatrics		1.106	2.168	1.756	1.626
Obstetrics-Gynecology		1.608	5.477	2.325	2.337
Radiology		22.277	22.456	26.302	50.458
Psychiatry		1.085	5.661	2.221	1.184
Anesthesiology		2.558	5.177	3.584	3.938

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 32—Average Waiting Time for Appointment and in Office by Specialty, 1976

Specialty	Number	Waiting Time For Appointment (in days)	Waiting Time In Office (in minutes)
		Mean	
Total[a]	4,644	8.3	22.4
General Practice	1,015	3.9	26.8
Internal Medicine	840	9.5	22.6
Surgery	1,225	10.2	24.5
Pediatrics	304	8.0	22.5
Obstetrics-Gynecology	354	17.4	25.8
Radiology	163	1.5	17.6
Psychiatry	385	8.2	6.3
Anesthesiology	53	2.6	7.3
		Standard Error of the Mean	
Total		.260	.288
General Practice		.209	.687
Internal Medicine		.625	.656
Surgery		.625	.583
Pediatrics		.715	.957
Obstetrics-Gynecology		1.562	.927
Radiology		.264	1.005
Psychiatry		.794	.485
Anesthesiology		1.253	1.687

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 33—Average Waiting Time for Appointment and in Office by Type of Practice, 1976

Type of Practice	Number	Waiting Time For Appointment (in days)	Waiting Time In Office (in minutes)
		Mean	
Total[a]	4,644	8.3	22.4
Solo	2,401	6.9	21.8
2 Man	463	9.6	23.2
3 Man	325	10.1	23.1
4 Man	203	11.2	23.4
5-7 Man	242	7.9	23.2
8-25 Man	209	7.8	20.7
26 Man & Over	200	17.7	23.0
		Standard Error of the Mean	
Total		.260	.288
Solo		.333	.424
2 Man		1.030	.783
3 Man		.891	.960
4 Man		1.563	1.243
5-7 Man		.692	1.199
8-25 Man		1.114	1.003
26 Man & Over		2.245	1.423

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 34—Average Fee for Initial Office Visit by Specialty, 1971, 1973-1976[a]

	Year				
Specialty	1971 (n=3451)	1973 (n=2763)	1974 (n=3149)	1975 (n=3505)	1976 (n=3596)
General Practice	$ 9.65	$10.73	$12.02	$13.10	$14.80
Internal Medicine	24.04	20.34	23.12	26.11	31.27
Surgery	17.09	17.59	18.88	20.81	23.29
Pediatrics	11.18	11.96	14.48	16.18	17.45
Obstetrics-Gynecology	17.59	19.59	22.08	23.57	27.41

[a] An initial office visit is defined as "office visit, new patient, brief evaluation, history, examination and/or treatment."

Source: Periodic Survey of Physicians, 1971-1976. Center for Health Services Research and Development, American Medical Association.

Table 35—Average Fee for Initial Office Visit by Type of Practice and Specialty, 1976

			Specialty[b]					
	Total		General Practice (N=880)	Internal Medicine (N=641)	Surgery (N=1029)	Pediatrics (N=244)	Obstetrics-Gynecology (N=315)	Psychiatry (N=261)
Type of Practice	N	Mean	Mean					
Total[a]	3,596	$24.9	$14.8	$31.3	$23.3	$17.4	$27.4	$50.2
Solo	2,017	24.6	14.7	29.8	23.3	16.4	28.4	49.8
2 Man	378	23.9	14.5	36.0	22.8	14.8	24.7	46.4
3 Man	253	25.6	14.8	33.4	24.9	17.6	26.8	51.7
4 Man	157	24.7	14.3	33.5	24.2	23.4	29.3	46.9
5-7 Man	155	25.2	15.4	31.3	23.8	19.3	24.8	53.8
8-25 Man	138	24.0	17.2	31.3	20.7	22.4	21.8	36.8
26 Man & Over	103	29.1	16.4	31.8	25.6	17.9	23.7	57.4
		Standard Error of the Mean						
Total		.278	.249	.837	.388	.592	.583	.867
Solo		.377	.328	1.181	.547	.582	.880	.935
2 Man		.876	.586	3.104	1.066	.826	1.280	4.771
3 Man		1.005	1.113	2.926	1.660	.695	1.368	3.761
4 Man		1.133	.755	5.981	1.238	4.632	1.997	2.662
5-7 Man		1.261	1.157	.842	2.351	2.564	2.024	3.270
8-25 Man		1.268	1.449	.841	1.584	5.052	4.266	5.607
26 Man & Over		1.819	2.804	3.423	2.044	2.084	3.428	14.134

[a] Total includes "Other" and "Not Specified" categories; [b] Data for Radiology and Anesthesiology categories do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 36—Average Fee for Initial Office Visit by Census Division and Specialty, 1976

Census Division	Total		Specialty[b]					
			General Practice (N=880)	Internal Medicine (N=641)	Surgery (N=1029)	Pediatrics (N=244)	Obstetrics-Gynecology (N=315)	Psychiatry (N=261)
	N	Mean	Mean					
Total[a]	3,596	$24.9	$14.8	$31.3	$23.3	$17.4	$27.4	$50.2
New England	224	23.1	13.1	25.9	21.8	16.1	27.8	44.8
Middle Atlantic	707	27.4	13.6	33.9	26.3	17.1	27.8	48.7
East North Central	613	22.2	13.9	27.4	21.3	17.8	24.9	47.9
West North Central	243	20.7	14.2	28.9	20.1	15.3	19.4	48.9
South Atlantic	555	25.7	15.2	32.1	22.3	17.1	29.9	51.3
East South Central	166	20.7	12.2	39.9	19.4	13.9	26.1	42.5
West South Central	302	23.5	14.5	35.3	20.4	19.0	23.5	49.8
Mountain	189	24.2	14.6	30.8	23.2	14.2	20.3	52.3
Pacific	579	28.5	18.9	29.8	27.6	20.7	33.5	55.6
		Standard Error of the Mean						
Total		.278	.249	.837	.388	.592	.583	.867
New England		.851	.759	2.222	.998	1.172	1.907	2.355
Middle Atlantic		.666	.401	1.852	.989	.770	1.133	1.642
East North Central		.576	.372	1.747	.849	2.792	1.094	1.495
West North Central		1.069	1.681	2.633	1.408	1.637	2.244	6.564
South Atlantic		.760	.621	1.947	.919	2.080	1.545	2.449
East South Central		1.093	.669	6.421	.918	1.030	2.632	4.787
West South Central		.935	.781	3.197	1.046	2.857	1.449	3.115
Mountain		1.251	.619	4.716	1.769	1.662	1.714	2.840
Pacific		.723	.466	2.379	1.157	.652	1.656	2.306

[a] Total includes "Other" and "Not Specified" categories; [b] Data for Radiology and Anesthesiology categories do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 37—Average Fee for Initial Office Visit by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
				Less than 1,000,000[b]	1,000,000 and over[c]
			(n = 607)	(n = 1280)	(n = 1693)
	N	Mean	Mean		
Total[a]	3,596	$24.9	$16.9	$23.9	$28.5
General Practice	880	14.8	13.7	14.3	16.2
Internal Medicine	641	31.3	22.8	31.9	32.6
Surgery	1,029	23.3	16.6	21.5	27.2
Pediatrics	244	17.4	15.0	17.8	17.8
Obstetrics-Gynecology	315	27.4	21.4	25.9	30.1
Radiology	11	25.1	24.9	d	d
Psychiatry	261	50.2	35.8	50.5	51.2
Anesthesiology	11	30.5	23.5	d	31.9
		Standard Error of the Mean			
Total		.278	.469	.434	.436
General Practice		.249	.601	.321	.334
Internal Medicine		.837	2.072	1.443	1.151
Surgery		.388	.573	.561	.661
Pediatrics		.592	1.191	1.116	.774
Obstetrics-Gynecology		.583	1.432	.862	.844
Radiology		4.091	5.560	d	d
Psychiatry		.867	2.922	1.641	1.033
Anesthesiology		6.116	10.790	d	8.425

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [d] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 38—Average Fee for Follow-up Office Visit by Specialty, 1971, 1973-1976[a]

Specialty	Year 1971 (n=3424)	1973 (n=2737)	1974 (n=2898)	1975 (n=3499)	1976 (n=3579)
General Practice	$6.93	$ 7.52	$ 8.75	$ 9.29	$10.65
Internal Medicine	9.96	11.13	12.28	13.56	15.52
Surgery	9.18	10.34	11.27	12.22	13.94
Pediatrics	7.89	8.65	10.38	11.07	12.52
Obstetrics-Gynecology	9.52	11.53	13.10	13.73	15.40

[a] A follow-up office visit is defined as "office visit, established patient, brief examination, evaluation and/or treatment, same or new illness."

Source: Periodic Survey of Physicians, 1971-1976. Center for Health Services Research and Development, American Medical Association.

Table 39—Average Fee for Follow-up Office Visit by Type of Practice and Specialty, 1976

			Specialty[b]					
	Total		General Practice (N=884)	Internal Medicine (N=690)	Surgery (N=997)	Pediatrics (N=245)	Obstetrics-Gynecology (N=312)	Psychiatry (N=237)
Type of Practice	N	Mean	Mean					
Total[a]	3,579	$15.36	$10.65	$15.52	$13.94	$12.52	$15.40	$41.32
Solo	2,001	15.98	10.58	15.26	14.42	11.85	16.68	42.26
2 Man	382	14.18	10.40	18.15	13.22	11.43	14.39	35.28
3 Man	255	14.67	10.82	15.97	13.77	13.21	13.36	41.50
4 Man	154	14.15	9.97	15.04	13.49	13.77	17.14	32.43
5-7 Man	156	14.33	11.30	15.49	13.08	16.13	14.22	38.50
8-25 Man	134	14.00	11.54	15.49	12.85	14.23	12.30	34.33
26 Man & Over	105	15.68	13.00	14.97	14.44	12.08	13.18	38.38
		Standard Error of the Mean						
Total		.177	.095	.473	.182	.289	.313	.879
Solo		.238	.119	.325	.278	.409	.515	.989
2 Man		.805	.283	3.562	.380	.494	.646	5.026
3 Man		.493	.441	.850	.589	.415	.685	5.326
4 Man		.557	.309	1.449	.654	1.156	1.409	4.775
5-7 Man		.609	.458	.476	.937	2.338	.868	6.551
8-25 Man		.650	.568	.475	.736	1.842	1.165	4.702
26 Man & Over		.739	1.140	.872	1.112	.751	.999	7.509

[a] Total includes "Other" and "Not Specified" categories; [b] Data for Radiology and Anesthesiology categories do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 40—Average Fee for Follow-up Office Visit by Census Division and Specialty, 1976

Census Division	Total N	Total Mean	Specialty[b] General Practice (N=884)	Internal Medicine (N=690)	Surgery (N=997)	Pediatrics (N=245)	Obstetrics-Gynecology (N=312)	Psychiatry (N=237)
			Mean					
Total[a]	3,579	$15.36	$10.65	$15.52	$13.94	$12.52	$15.40	$41.32
New England	226	15.84	10.12	14.86	14.16	13.18	15.71	36.52
Middle Atlantic	703	17.77	10.97	18.03	16.15	13.64	16.88	43.02
East North Central	610	13.90	10.17	13.15	13.08	12.40	14.49	37.83
West North Central	244	11.51	8.82	12.11	11.41	10.68	11.50	36.00
South Atlantic	559	15.20	10.79	14.45	13.84	12.34	15.47	39.95
East South Central	165	11.73	9.02	12.98	12.01	10.14	14.21	27.50
West South Central	299	13.63	10.01	15.43	12.19	11.52	13.68	41.39
Mountain	184	14.27	10.42	12.56	12.35	10.46	12.39	42.15
Pacific	571	17.99	13.20	18.83	15.42	13.52	17.45	47.76
		Standard Error of the Mean						
Total		.177	.095	.473	.182	.289	.313	.879
New England		.584	.331	.684	.557	1.164	1.175	2.269
Middle Atlantic		.409	.246	.685	.526	.727	.776	1.605
East North Central		.329	.160	.321	.426	1.031	.754	1.939
West North Central		.437	.210	.529	.615	.501	1.041	4.840
South Atlantic		.376	.287	.352	.470	.837	.696	2.198
East South Central		.345	.274	.724	.375	.523	1.237	6.535
West South Central		.494	.291	1.105	.513	.574	.974	3.326
Mountain		.739	.358	.473	.476	1.058	.986	3.256
Pacific		.671	.222	2.936	.440	.434	.714	2.454

[a]Total includes "Other" and "Not Specified" categories; [b]Data for Radiology and Anesthesiology categories do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 41—Average Fee for Follow-up Office Visit by Specialty and Location, 1976

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(n = 608)	Less than 1,000,000[b] (n = 1269)	1,000,000 and over[c] (n = 1686)
Specialty	N	Mean	Mean		
Total[a]	3,579	$15.36	$10.70	$13.87	$18.20
General Practice	884	10.65	9.37	10.57	11.77
Internal Medicine	690	15.52	11.34	13.64	17.54
Surgery	997	13.94	10.75	12.60	16.24
Pediatrics	245	12.52	9.62	11.98	13.61
Obstetrics-Gynecology	312	15.40	12.36	13.93	17.33
Radiology	12	14.78	15.63	d	d
Psychiatry	237	41.32	25.71	38.56	43.80
Anesthesiology	11	18.68	12.63	d	23.83
		Standard Error of the Mean			
Total		.177	.181	.211	.319
General Practice		.095	.140	.161	.155
Internal Medicine		.473	.315	.254	.836
Surgery		.182	.311	.231	.301
Pediatrics		.289	.498	.379	.458
Obstetrics-Gynecology		.313	.686	.395	.482
Radiology		2.798	4.351	d	d
Psychiatry		.879	2.927	1.468	1.058
Anesthesiology		5.536	2.035	d	9.951

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [d] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 42—Average Fee for Follow-up Hospital Visit by Type of Practice and Specialty, 1976[a]

Type of Practice	Total N	Total Mean	Specialty: General Practice (N=733)	Specialty: Internal Medicine (N=646)	Specialty: Surgery (N=836)	Specialty: Pediatrics (N=224)	Specialty: Obstetrics-Gynecology (N=212)	Specialty: Psychiatry (N=132)
			Mean					
Total[b]	2,958	$20.73	$16.11	$21.02	$20.95	$18.59	$23.25	$36.96
Solo	1,593	21.21	16.32	20.62	21.92	18.72	24.69	39.12
2 Man	334	19.87	15.97	20.94	19.27	15.44	24.63	35.25
3 Man	218	20.79	18.12	25.53	18.11	18.79	22.00	34.88
4 Man	132	19.53	12.26	23.29	21.64	18.39	21.55	36.36
5-7 Man	138	18.21	15.30	20.98	19.00	17.54	22.73	24.80
8-25 Man	117	18.84	15.56	20.97	19.96	22.51	13.78	c
26 Man & Over	89	22.12	c	21.05	21.73	22.44	23.36	c
		Standard Error of the Mean						
Total		.280	.338	.612	.575	.678	.897	1.666
Solo		.393	.424	.726	.982	1.073	1.395	2.080
2 Man		.947	.938	3.229	1.030	1.918	2.987	13.419
3 Man		.862	2.541	2.219	1.270	1.556	2.195	5.702
4 Man		1.021	.785	3.376	1.943	2.068	3.708	4.190
5-7 Man		.994	1.474	.613	3.277	2.855	2.196	1.594
8-25 Man		1.118	1.833	.612	2.172	3.646	1.553	c
26 Man & Over		1.461	c	2.829	3.126	3.325	3.391	c

[a] A follow-up hospital visit is defined as a "hospital visit, new or established patient, brief examination, evaluation and/or treatment, same illness; [b] Total includes "Other" and "Not Specified" categories; [c] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Physicians' Professional Expenses

Professional expenses for the average physician rose 13.2% from 1974 to 1975 and 10.3% from 1975 to 1976. The increase in professional expenses, 1975 to 1976, by specialty were:

- internal medicine—12.8%
- obstetrics-gynecology-12.0%
- surgery-11.5%
- anesthesiology-11.0%
- general practice—9.7%
- radiology--8.5%
- psychiatry--6.1%
- pediatrics—6.0%

In both 1975 and 1976, surgeons reported the highest average level of professional expenses (1975: $49,115; 1976: $54,779) and psychiatrists reported the lowest levels of professional expenses (1975: $18,708; 1976: $19,842). The following comments about the pattern of professional expenses in 1975 and 1976 can be made:

- In both 1975 and 1976, the average physician in the New England census division had the lowest level of professional expenses (1975: $28,374; 1976: $30,316) and the average physician in the East South Central census division had the highest level of professional expenses (1975: $48,020; 1976: $50,343).
- In both 1975 and 1976, the average physician in a nonmetropolitan area had higher professional expenses than the average physician in a metropolitan area with a population of more than one million persons.

In 1976, the average physician paid $4,714 for professional liability insurance. The average premium ranged from a high of $8,198 for specialists in obstetrics-gynecology to a low of $1,140 for psychiatrists. The average physician in the Pacific census division paid the highest level of premium ($7,722) while the average physician in the East South Central census division paid the lowest level of premium $2,784). The average physician in a metropolitan area with a population of at least one million persons paid 32.4% more for professional insurance than his counterpart in a nonmetropolitan area ($5,263 vs. $3,974).

Table 43—Average Fee for Follow-up Hospital Visit by Census Division and Specialty, 1976

Census Division	Total		Specialty[b]					
			General Practice (N=733)	Internal Medicine (N=646)	Surgery (N=836)	Pediatrics (N=224)	Obstetrics-Gynecology (N=212)	Psychiatry (N=132)
	N	Mean	Mean					
Total[a]	2,958	$20.73	$16.11	$21.02	$20.95	$18.59	$23.25	$36.96
New England	181	21.40	13.52	19.04	24.75	19.57	20.83	35.31
Middle Atlantic	521	23.81	15.60	23.49	23.97	21.49	27.68	46.24
East North Central	505	18.88	16.54	16.96	19.93	19.84	19.13	28.02
West North Central	222	16.40	12.54	18.07	17.50	18.94	15.82	39.17
South Atlantic	463	20.55	15.85	20.48	20.59	18.51	25.04	31.64
East South Central	147	16.09	12.76	16.84	16.43	12.39	20.68	33.75
West South Central	263	19.46	16.55	19.71	17.91	17.28	24.66	33.08
Mountain	152	19.12	17.29	19.87	17.50	15.88	16.38	28.13
Pacific	494	21.91	19.21	26.37	23.67	17.22	27.18	45.43
		Standard Error of the Mean						
Total		.280	.338	.612	.575	.678	.897	1.666
New England		1.783	1.121	1.666	5.185	1.990	2.449	7.940
Middle Atlantic		.698	.704	1.008	1.454	1.636	3.035	5.686
East North Central		.627	.795	1.067	1.179	2.860	1.433	2.524
West North Central		.704	.747	1.870	1.518	2.675	1.872	3.962
South Atlantic		.583	.903	1.097	1.014	1.630	1.942	3.873
East South Central		.745	.919	1.833	1.299	1.444	3.397	6.250
West South Central		.694	1.390	1.531	1.137	1.468	2.519	3.649
Mountain		1.122	1.841	3.425	1.461	6.560	3.296	4.904
Pacific		.801	.737	2.946	1.285	1.089	2.643	3.232

[a] Total includes "Other" and "Not Specified" categories; [b] Data for Radiology and Anesthesiology categories do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976, Center for Health Services Research and Development, American Medical Association.

Table 44—Average Fee for Follow-up Hospital Visit by Specialty and Location, 1976

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(n = 516)	Less than 1,000,000[b] (n = 1077)	1,000,000 and over[c] (n = 1357)
Specialty	N	Mean		Mean	
Total[a]	2,958	$20.73	$15.38	$19.56	$23.73
General Practice	733	16.11	13.57	16.71	17.66
Internal Medicine	646	21.02	16.90	18.55	23.33
Surgery	836	20.95	16.43	19.72	23.87
Pediatrics	224	18.59	16.36	17.10	20.39
Obstetrics-Gynecology	212	23.25	15.28	21.09	27.30
Radiology	10	14.99	d	14.30	d
Psychiatry	132	36.96	26.60	28.68	43.33
Anesthesiology	11	22.82	13.50	d	27.40
		Standard Error of the Mean			
Total		.280	.426	.452	.448
General Practice		.338	.575	.675	.494
Internal Medicine		.612	1.372	.782	.945
Surgery		.575	.904	1.030	.808
Pediatrics		.678	1.708	1.095	.976
Obstetrics-Gynecology		.897	1.459	1.099	1.504
Radiology		2.696	d	4.206	d
Psychiatry		1.666	4.658	1.968	2.322
Anesthesiology		5.549	3.841	d	11.413

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs. [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [d] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 45—Average Fee for Periodic Examination by Type of Practice and Specialty, 1976[a]

			Specialty					
	Total		General Practice (N=819)	Internal Medicine (N=640)	Surgery (N=522)	Pediatrics (N=143)	Obstetrics Gynecology (N=274)	Psychiatry (N=43)
Type of Practice	N	Mean	Mean					
Total[b]	2,544	$27.62	$25.65	$38.65	$22.70	$16.76	$21.93	$38.84
Solo	1,414	27.38	24.71	38.29	23.78	15.05	22.73	40.19
2 Man	269	27.29	24.73	41.12	22.18	15.38	19.18	c
3 Man	179	27.37	29.58	38.45	20.93	19.77	19.52	c
4 Man	119	26.86	27.10	40.38	20.45	19.88	25.72	c
5-7 Man	117	29.35	31.37	38.63	24.88	16.94	19.40	c
8-25 Man	95	26.48	24.90	38.66	20.40	21.29	19.00	c
26 Man & Over	72	32.29	34.60	43.25	22.18	23.43	18.13	c
		Standard Error of the Mean						
Total		.372	.585	.900	.714	.742	.520	2.367
Solo		.496	.692	1.208	1.124	1.090	.780	2.757
2 Man		1.467	1.643	4.697	1.622	1.819	.919	c
3 Man		1.307	3.957	2.258	2.193	1.850	1.061	c
4 Man		1.454	2.466	4.488	1.955	2.682	2.937	c
5-7 Man		1.573	2.771	.904	6.294	2.628	1.344	c
8-25 Man		1.485	2.934	.903	2.008	6.531	3.446	c
26 Man & Over		1.945	3.957	3.289	1.688	4.879	1.723	c

[a] A periodic examination is defined as a "periodic or annual type examination, established patient, adult, excluding lab and x-ray." [b] Total includes "Other" and "Not Specified" categories; [c] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 46—Average Fee for Periodic Examination by Census Division and Specialty, 1976

Census Division	Total		Specialty					
			General Practice (N=819)	Internal Medicine (N=640)	Surgery (N=522)	Pediatrics (N=143)	Obstetrics-Gynecology (N=274)	Psychiatry (N=43)
	N	Mean	Mean					
Total[a]	2,544	$27.62	$25.65	$38.65	$22.70	$16.76	$21.93	$38.84
New England	165	21.67	18.66	30.16	17.88	15.47	21.24	30.20
Middle Atlantic	472	26.96	21.17	38.00	21.83	16.00	22.68	42.50
East North Central	443	26.25	24.76	37.22	20.85	19.34	21.14	35.29
West North Central	189	22.82	20.33	33.51	21.50	13.88	17.64	37.83
South Atlantic	401	28.70	27.46	41.05	20.18	15.96	22.91	38.00
East South Central	121	22.97	21.33	33.63	21.89	11.22	20.64	b
West South Central	209	24.83	25.04	33.89	20.28	13.46	17.19	39.00
Mountain	123	26.48	25.15	34.68	26.00	b	18.64	b
Pacific	412	36.67	36.83	48.82	31.17	22.79	25.95	47.08
		Standard Error of the Mean						
Total		.372	.585	.900	.714	.742	.520	2.367
New England		.821	1.580	1.799	1.123	1.072	1.093	6.344
Middle Atlantic		.989	1.274	2.081	2.531	1.419	1.064	8.036
East North Central		.806	1.245	1.815	1.598	4.045	1.255	5.528
West North Central		1.041	1.329	2.775	2.295	1.329	2.238	11.425
South Atlantic		.900	1.991	1.656	1.030	1.647	1.406	8.746
East South Central		1.539	2.739	3.282	3.293	1.128	2.574	b
West South Central		1.088	1.815	2.793	1.386	.938	1.196	5.099
Mountain		1.095	1.707	2.285	2.010	b	1.927	b
Pacific		1.116	1.526	3.471	1.719	1.715	1.362	4.449

[a] Total includes "Other" and "Not Specified" categories; [b] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 47—Average Fee for Periodic Examination by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
				Less than 1,000,000[b]	1,000,000 and over[c]
	N	Mean	(N=493)	(N=898)	(N=1146)
			Mean		
Total[a]	2,544	$27.62	$22.10	$26.46	$30.97
General Practice	819	25.65	21.11	26.82	28.74
Internal Medicine	640	38.65	33.51	36.56	41.05
Surgery	522	22.70	19.20	21.00	25.70
Pediatrics	143	16.76	12.24	17.26	17.45
Obstetrics-Gynecology	274	21.93	20.82	20.61	23.29
Radiology	5	30.33	d	d	d
Psychiatry	43	38.84	d	34.79	42.81
Anesthesiology	7	25.14	d	d	33.75
		Standard Error of the Mean			
Total		.372	.588	.522	.656
General Practice		.585	.686	1.062	1.135
Internal Medicine		.900	2.027	1.043	1.443
Surgery		.714	1.425	.775	1.379
Pediatrics		.742	1.049	1.393	.967
Obstetrics-Gynecology		.520	1.855	.823	.701
Radiology		8.277	d	d	d
Psychiatry		2.367	d	3.672	2.905
Anesthesiology		6.752	d	d	9.656

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [d] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 48—Average Professional Expenses by Specialty, 1970-1976[a]

Specialty	Year						
	1970	1971	1972	1973	1974	1975	1976[c]
Total[b]	$24,279	$28,919	$31,318	$32,176	$33,985	$38,481	$42,443
General Practice	24,183	32,060	34,543	33,961	36,737	38,645	42,407
Internal Medicine	24,951	28,265	31,269	33,983	35,813	40,390	45,567
Surgery	27,065	32,863	35,750	38,009	39,273	49,115	54,779
Pediatrics	24,887	28,469	29,994	32,392	29,985	34,558	36,624
Obstetrics-Gynecology	27,735	33,337	36,461	37,172	41,855	48,535	54,377
Psychiatry	13,287	12,973	14,091	14,329	14,009	18,708	19,842
Anesthesiology	11,180	12,699	13,937	13,973	19,290	20,000	22,207

[a] Because of differences in sampling procedure, figures may not be consistent with previously published data for some years; [b] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total; [c] Projected by respondents.

Source: Periodic Survey of Physicians, 1972-1977. Center for Health Services Research and Development, American Medical Association.

Table 49—Average Professional Expenses by Type of Practice and Specialty, 1975

	Total	Total	Specialty							
			Gen. Prac. (N=843)	Int. Med. (N=610)	Surg. (N=910)	Ped. (N=224)	Ob. Gyn. (N=269)	Rad. (N=128)	Psych. (N=318)	Anes. (N=152)
Type of Practice	N	Mean	Mean							
Total[a]	3,753	$38,481	$38,645	$40,390	$49,115	$34,558	$48,535	$36,211	$18,708	$20,000
Solo	2,245	36,866	37,519	37,985	46,782	35,467	48,699	53,684	19,828	21,239
2 Man	367	44,262	43,779	40,149	53,365	38,238	58,385	39,778	18,500	17,571
3 Man	232	44,586	36,795	45,526	60,691	38,036	52,636	38,313	12,417	27,500
4 Man	152	39,382	49,618	52,000	45,941	35,400	48,474	33,333	11,444	18,400
5-7 Man	202	39,040	50,031	40,619	43,414	32,429	53,100	38,276	36,222	19,286
8-25 Man	162	37,432	37,524	40,619	58,077	41,833	48,818	29,789	10,273	15,048
26 Man & Over	106	38,925	16,500	32,276	63,444	24,600	50,300	18,500	36,667	31,333
		Standard Error of the Mean								
Total		542	1,041	1,253	1,218	1,762	2,164	3,781	1,055	1,273
Solo		671	1,265	1,538	1,465	2,852	3,035	15,586	1,181	1,950
2 Man		1,903	3,311	2,923	3,961	5,418	8,063	12,886	2,929	4,961
3 Man		2,677	3,572	5,333	7,048	3,615	9,768	11,898	3,132	10,966
4 Man		2,522	5,146	7,856	5,903	6,058	6,042	13,151	2,719	8,370
5-7 Man		2,351	7,384	1,259	4,908	6,968	8,594	5,942	16,969	2,874
8-25 Man		2,587	5,925	1,259	6,216	5,999	9,845	7,268	2,632	2,466
26 Man & Over		3,882	9,818	6,148	10,494	9,394	8,392	14,309	16,415	4,096

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 50—Average Projected Professional Expenses by Type of Practice and Specialty, 1976

	Total		Specialty							
			Gen. Prac. (N=808)	Int. Med. (N=582)	Surg. (N=864)	Ped. (N=213)	Ob. Gyn. (N=257)	Rad. (N=125)	Psych. (N=311)	Anes. (N=145)
Type of Practice	N	Mean	Mean							
Total[a]	3,586	$42,443	$42,407	$45,567	$54,779	$36,624	$54,377	$39,272	$19,842	$22,207
Solo	1,993	41,704	41,698	42,293	51,696	36,040	53,561	55,556	21,588	23,882
2 Man	350	49,811	48,714	47,478	60,908	41,050	67,160	51,091	20,733	23,167
3 Man	226	50,040	40,600	51,811	68,877	41,222	58,500	42,313	14,818	16,500
4 Man	150	44,260	55,000	59,813	52,485	44,667	51,421	35,000	12,889	22,600
5-7 Man	191	41,853	48,929	45,839	52,708	36,786	61,300	39,750	21,889	20,900
8-25 Man	153	41,641	38,429	45,839	65,000	41,846	58,091	32,500	10,727	17,667
26 Man & Over	104	42,029	15,833	34,968	67,846	26,889	54,000	b	b	b
		Standard Error of the Mean								
Total		606	1,222	1,430	1,367	1,846	2,451	3,953	1,003	1,352
Solo		782	1,530	1,792	1,651	3,068	3,604	15,904	1,243	1,943
2 Man		2,024	3,880	3,539	4,421	4,993	8,409	14,688	2,766	6,379
3 Man		2,930	3,877	6,226	7,338	3,735	9,865	11,884	4,274	4,173
4 Man		2,813	5,805	9,148	6,386	6,214	7,291	13,281	3,011	9,621
5-7 Man		2,439	7,186	1,436	6,152	7,171	10,286	6,358	5,458	3,620
8-25 Man		2,856	6,408	1,436	6,461	6,335	10,700	8,809	3,379	3,145
26 Man & Over		4,228	9,583	6,378	11,608	10,574	9,087	b	b	b

[a] Total includes "Other" and "Not Specified" categories; [b] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 51—Average Professional Expenses by Census Division and Specialty, 1975

Census Division	Total		Specialty							
	N	Mean	Gen. Prac. (N=843)	Int. Med. (N=610)	Surg. (N=910)	Ped. (N=224)	Ob. Gyn. (N=269)	Rad. (N=128)	Psych. (N=318)	Anes. (N=152)
			Mean							
Total[a]	3,753	$38,481	$38,645	$40,390	$49,115	$34,558	$48,535	$36,211	$18,708	$20,000
New England	243	28,374	21,652	35,600	35,509	29,458	36,333	10,500	14,105	19,167
Middle Atlantic	730	33,385	25,294	32,164	46,860	27,490	39,631	48,733	21,468	14,208
East North Central	630	39,857	43,045	42,557	49,711	37,037	49,282	29,688	18,245	24,379
West North Central	231	37,745	37,169	46,639	50,426	40,545	59,125	18,000	11,222	9,222
South Atlantic	565	36,782	32,961	42,575	45,472	30,294	52,635	24,238	20,620	12,813
East South Central	150	48,020	43,795	48,353	57,556	40,889	58,700	26,429	22,000	28,000
West South Central	301	44,807	50,975	49,774	51,552	40,222	53,235	41,111	14,053	20,125
Mountain	205	36,541	37,845	37,889	45,446	30,500	44,438	24,111	17,429	21,400
Pacific	674	44,320	47,912	42,563	57,605	43,227	58,524	56,107	18,104	24,238
		Standard Error of the Mean								
Total		542	1,041	1,253	1,218	1,762	2,164	3,781	1,055	1,273
New England		1,708	2,696	5,441	3,042	5,379	5,492	4,097	3,457	6,640
Middle Atlantic		1,113	1,737	1,858	2,667	3,391	3,380	15,534	2,877	1,702
East North Central		1,352	2,580	4,076	3,027	7,635	4,387	8,373	1,859	3,587
West North Central		2,149	2,815	5,398	5,807	8,092	11,552	2,809	4,648	2,871
South Atlantic		1,301	2,402	2,893	2,836	2,443	5,458	5,463	3,542	1,842
East South Central		3,694	5,214	9,354	8,050	8,558	13,881	7,201	3,117	11,897
West South Central		1,795	3,584	4,680	3,196	7,118	8,895	7,218	2,205	4,265
Mountain		1,823	3,288	4,550	3,489	7,489	8,165	10,667	2,836	4,050
Pacific		1,450	3,010	2,818	3,316	3,583	7,346	11,442	1,457	2,550

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 52—Average Projected Professional Expenses by Census Division and Specialty, 1976

			Specialty								
	Total		Gen. Prac. (N=808)	Int. Med. (N=582)	Surg. (N=864)	Ped. (N=213)	Ob. Gyn. (N=257)	Rad. (N=125)	Psych. (N=311)	Anes. (N=145)
Census Division	N	Mean	Mean							
Total[a]	3,586	$42,443	$42,407	$45,567	$54,779	$36,624	$54,377	$39,272	$19,842	$22,207
New England	231	30,316	24,156	39,458	39,275	29,261	40,200	13,857	11,526	21,200
Middle Atlantic	685	36,972	27,973	37,276	51,254	29,364	43,267	50,467	23,493	16,273
East North Central	602	44,149	47,006	47,271	56,243	41,481	55,919	24,929	21,288	25,759
West North Central	224	41,946	41,737	53,139	54,235	46,300	66,875	20,625	7,375	11,500
South Atlantic	542	40,087	33,789	47,637	51,709	32,147	57,231	29,095	19,813	14,214
East South Central	143	50,343	49,222	52,000	63,605	44,000	64,333	24,333	23,000	20,500
West South Central	293	49,645	57,792	57,125	56,277	39,059	59,529	44,833	17,190	23,000
Mountain	196	40,551	38,836	43,923	53,222	29,200	48,267	26,778	18,643	23,700
Pacific	649	49,388	53,319	47,736	64,358	44,762	67,667	64,296	19,554	28,538
		Standard Error of the Mean								
Total		606	1,222	1,430	1,367	1,846	2,451	3,953	1,003	1,352
New England		1,877	3,028	6,167	3,538	4,807	4,925	4,426	2,365	6,492
Middle Atlantic		1,242	1,975	2,046	3,028	3,992	3,741	15,538	3,075	1,994
East North Central		1,551	3,009	4,461	3,640	7,810	4,732	7,495	2,098	3,288
West North Central		2,275	3,449	6,263	5,039	9,071	13,077	3,560	2,171	2,918
South Atlantic		1,439	2,600	3,461	3,218	2,693	5,631	5,521	2,201	2,246
East South Central		3,604	5,649	10,587	8,516	9,452	14,013	7,606	3,309	10,560
West South Central		2,118	4,580	5,841	3,848	6,447	9,915	7,997	2,287	5,161
Mountain		2,055	3,777	4,880	3,833	7,372	9,305	10,709	3,098	4,447
Pacific		1,646	3,500	3,131	3,774	3,707	8,810	12,111	1,636	2,979

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 53—Average Professional Expenses by Specialty and Location, 1975

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(N=579)	Less than 1,000,000[b] (N=1305)	1,000,000 and over[c] (N=1848)
Specialty	N	Mean	Mean		
Total[a]	3,753	$38,481	$39,432	$39,116	$37,977
General Practice	843	38,645	40,955	37,515	38,276
Internal Medicine	610	40,390	42,859	40,082	40,345
Surgery	910	49,115	51,400	49,138	48,786
Pediatrics	224	34,558	34,762	34,633	34,675
Obstetrics-Gynecology	269	48,535	43,448	45,617	52,534
Radiology	128	36,211	18,615	36,447	44,327
Psychiatry	318	18,708	13,556	18,544	19,236
Anesthesiology	152	20,000	22,333	18,578	20,391
		Standard Error of the Mean			
Total		542	1,389	919	773
General Practice		1,041	1,895	1,769	1,764
Internal Medicine		1,253	5,187	2,046	1,616
Surgery		1,218	3,744	2,017	1,666
Pediatrics		1,762	4,179	2,623	2,643
Obstetrics-Gynecology		2,164	5,420	3,211	3,344
Radiology		3,781	2,877	4,659	7,531
Psychiatry		1,055	2,689	1,679	1,381
Anesthesiology		1,273	3,902	2,155	1,755

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

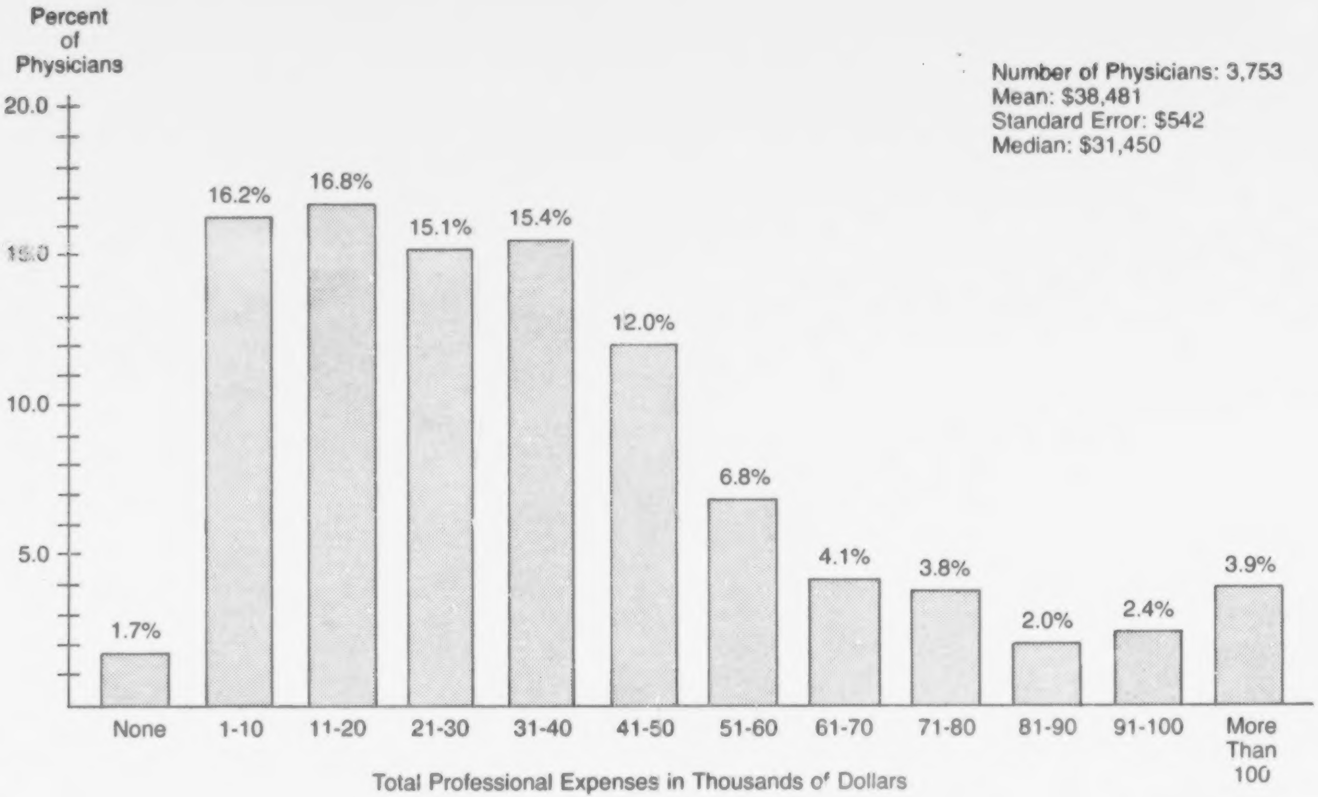
Table 54—Average Projected Professional Expenses by Specialty and Location, 1976

Specialty	Total N	Total Mean	Location: Nonmetropolitan (N=564)	Location: Metropolitan, Less than 1,000,000[b] (N=1243)	Location: Metropolitan, 1,000,000 and over[c] (N=1760)
			Mean	Mean	Mean
Total[a]	3,586	$42,443	$42,456	$43,404	$42,037
General Practice	808	42,407	43,178	42,677	42,121
Internal Medicine	582	45,567	48,016	45,179	45,617
Surgery	864	54,779	56,298	55,394	54,220
Pediatrics	213	36,624	36,381	36,329	36,862
Obstetrics-Gynecology	257	54,377	49,929	50,353	59,216
Radiology	125	39,272	20,520	40,587	46,833
Psychiatry	311	19,842	15,000	21,235	19,819
Anesthesiology	145	22,207	18,842	20,140	24,159
		Standard Error of the Mean			
Total		606	1,507	1,023	875
General Practice		1,222	2,113	2,111	2,124
Internal Medicine		1,430	5,855	2,296	1,857
Surgery		1,367	3,764	2,286	1,918
Pediatrics		1,846	4,299	2,588	2,844
Obstetrics-Gynecology		2,451	6,792	3,455	3,847
Radiology		3,953	2,832	5,594	7,493
Psychiatry		1,003	3,150	1,833	1,275
Anesthesiology		1,352	2,695	2,310	1,951

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 99,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

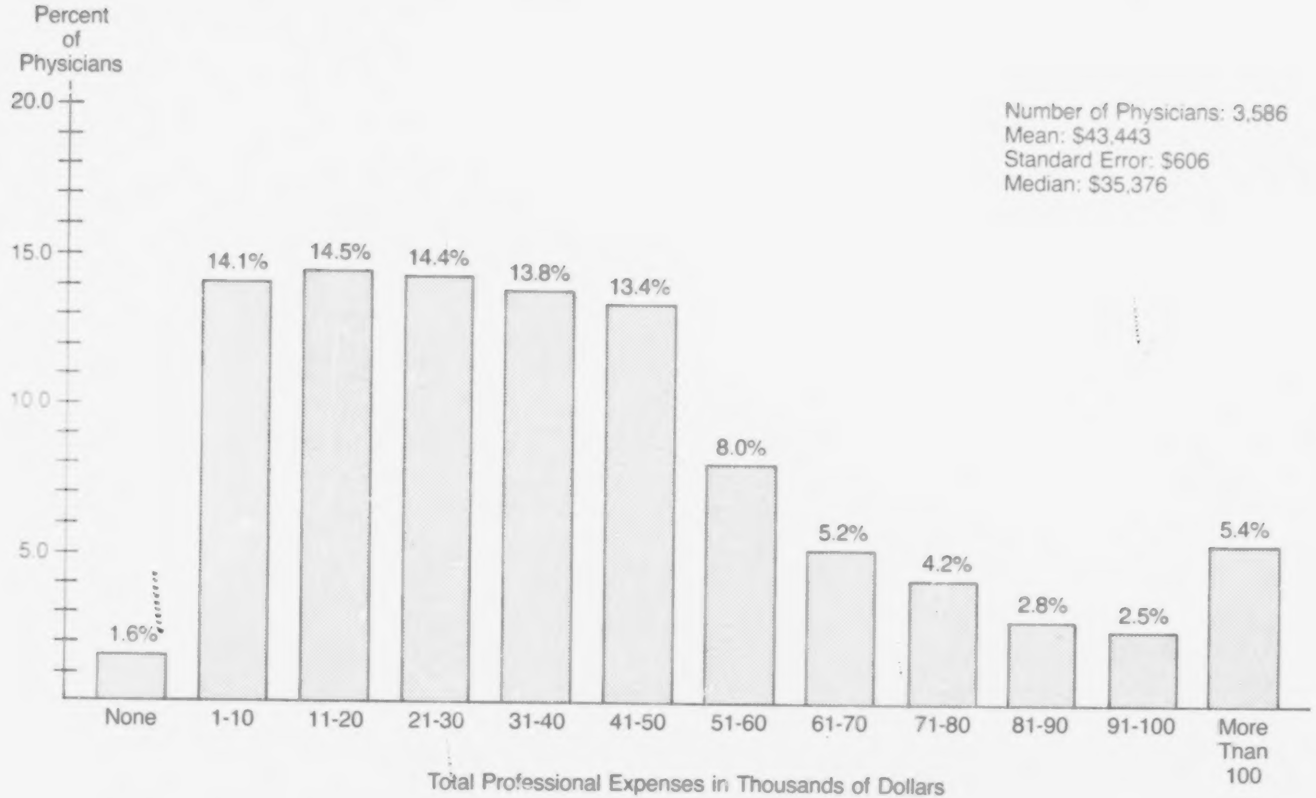
Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 4—Percentage Distribution of U.S. Physicians by Total Professional Expenses, 1975



Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

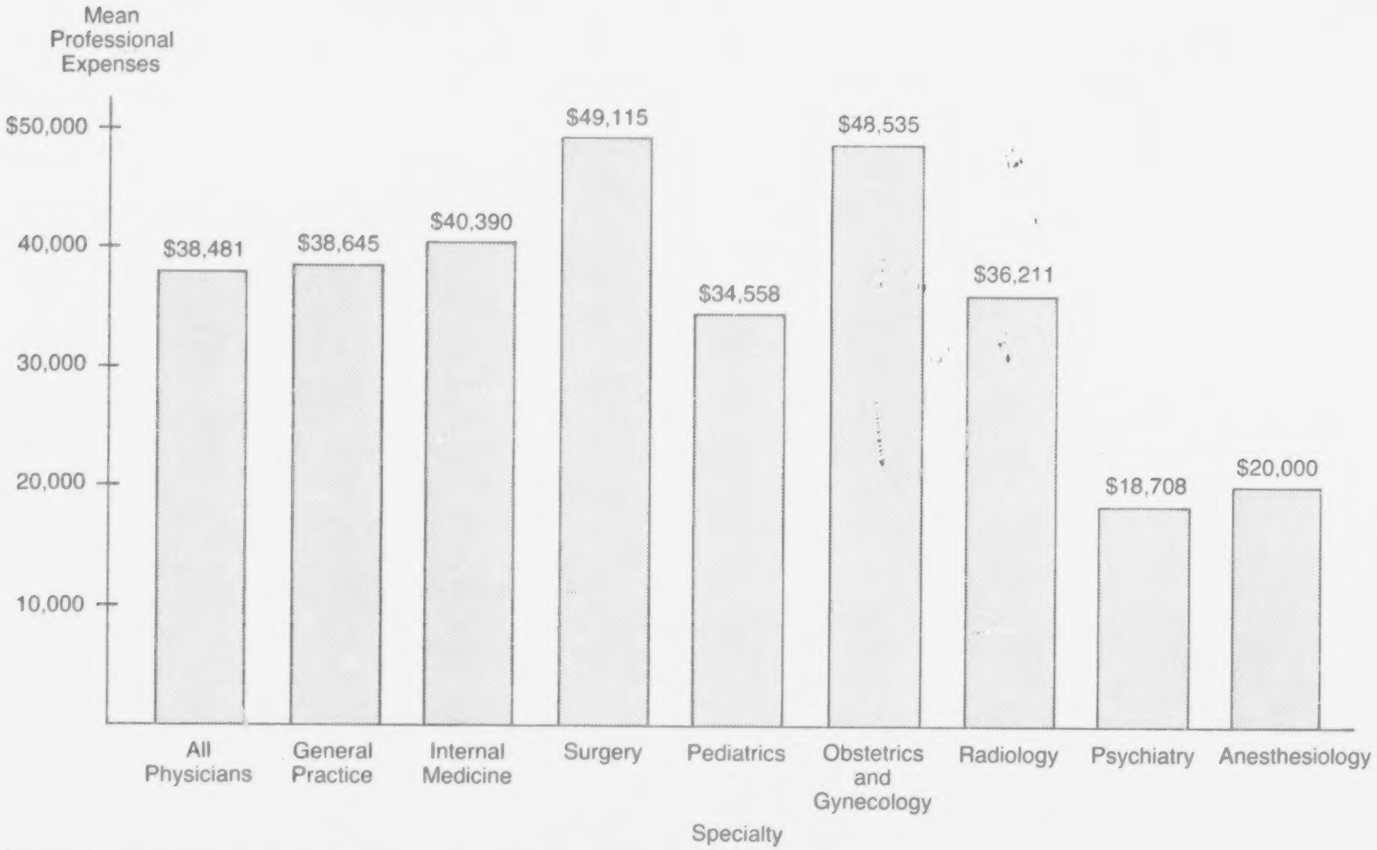
Figure 5—Percentage Distribution of U.S. Physicians by Total Projected Professional Expenses, 1976



Number of Physicians: 3,586
Mean: $43,443
Standard Error: $606
Median: $35,376

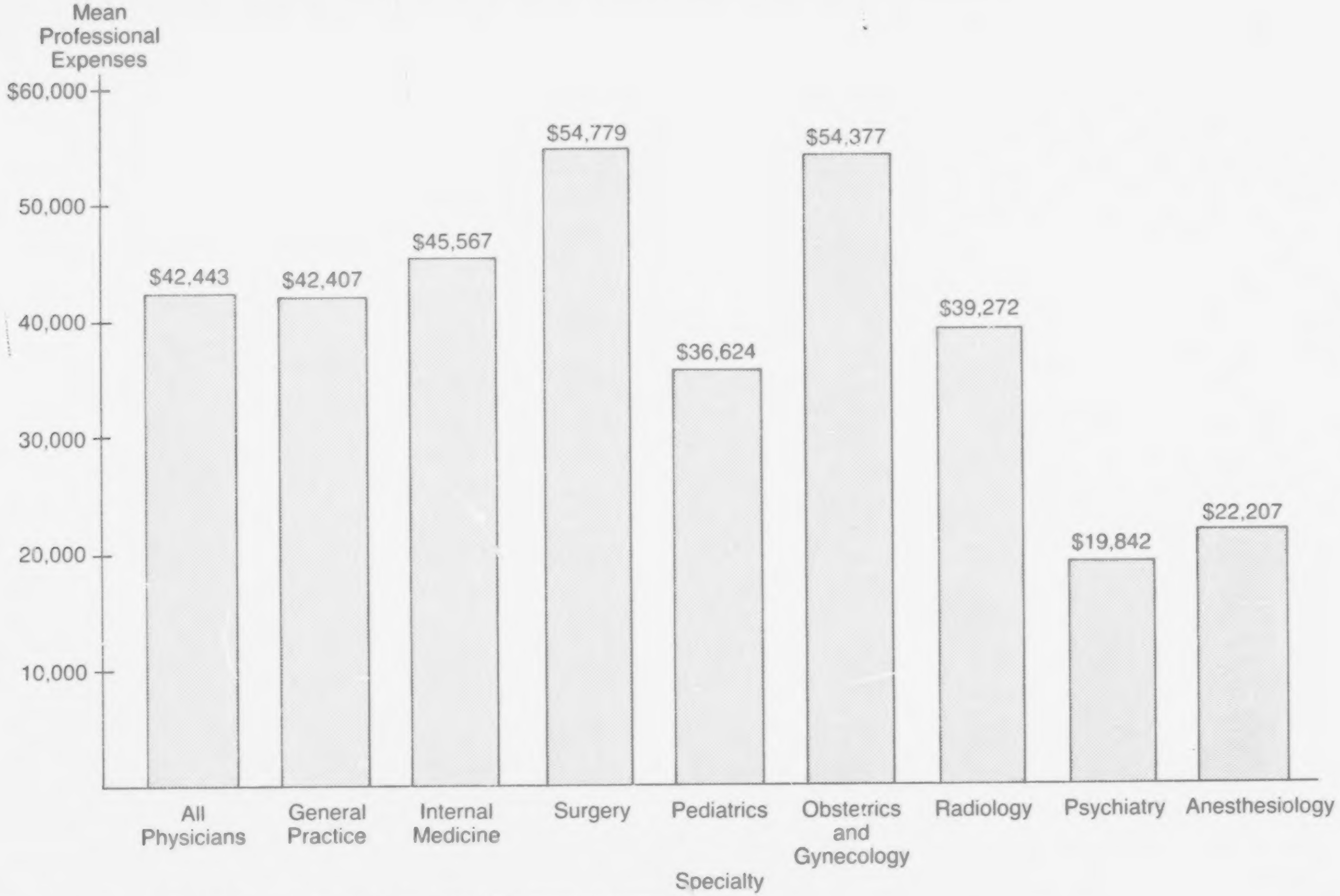
Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 6—Mean Professional Expenses by Specialty, 1975



Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 7—Mean Projected Professional Expenses by Specialty, 1976



Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 55—Percent Distribution of Physicians by Coverage Limits of Professional Liability Insurance by Specialty, 1976

Specialty	N	No Coverage	$25-$75	$50-$150	$100-$300	$200-$600	$500-$1500	$100-$3000	Other	Total
Total[a]	5,135	6.1	0.8	1.5	39.3	14.2	8.8	23.9	5.5	100.0
General Practice	1,083	9.8	1.5	2.3	48.8	13.4	6.2	14.0	4.1	100.0
Internal Medicine	865	3.4	1.0	1.3	36.3	13.2	9.6	30.8	4.5	100.0
Surgery	1,220	6.0	0.4	0.8	35.2	15.3	10.0	26.8	5.5	100.0
Pediatrics	319	4.4	0.9	0.6	40.1	11.9	8.2	27.6	6.3	100.0
Obstetrics-Gynecology	368	9.0	0.0	1.1	36.7	17.4	7.9	25.5	2.4	100.0
Radiology	232	0.4	0.0	0.0	34.5	15.9	8.6	33.2	7.3	100.0
Psychiatry	386	6.2	0.8	3.4	38.6	16.8	9.8	17.9	6.5	100.0
Anesthesiology	209	4.8	1.4	1.4	29.7	13.9	11.5	27.8	9.6	100.0

[a] Total includes "Other" specialties.

Note: Coverage limits are in Thousands of dollars.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 56—Percent Distribution of Physicians by Coverage Limits of Professional Liability Insurance, by Census Division, 1976

Census Division	N	No Coverage	$25-$75	$50-$150	$100-$300	$200-$600	$500-$1500	$1000-$3000	Other	Total
Total	5,135	6.1	0.8	1.5	39.3	14.2	8.8	23.9	5.5	100.0
New England	316	3.8	1.3	2.8	35.1	12.0	10.8	30.4	3.8	100.0
Middle Atlantic	996	3.6	0.7	1.0	32.7	8.5	10.8	39.5	3.1	100.0
East North Central	869	3.3	1.5	2.1	44.6	28.3	2.6	11.3	6.2	100.0
West North Central	360	3.9	0.6	3.3	52.5	20.6	6.9	8.6	3.6	100.0
South Atlantic	747	5.9	0.4	1.5	51.9	9.4	8.7	17.3	5.0	100.0
East South Central	223	2.2	0.0	0.9	52.5	16.6	13.0	11.7	3.1	100.0
West South Central	413	7.5	1.7	1.5	47.2	25.9	5.3	7.5	3.4	100.0
Mountain	262	7.6	0.0	0.4	48.9	5.3	11.1	19.1	7.6	100.0
Pacific	913	13.1	0.2	0.8	16.9	5.8	12.4	40.7	10.1	100.0

Note: Coverage limits are in Thousands of dollars.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 57—Percent Distribution of Physicians by Coverage Limits of Professional Liability Insurance, by Location, 1976

		Location		
		Nonmetropolitan	Metropolitan	
Coverage Limits	N	(N = 805)	Less than 1,000,000[a] (N = 1785)	1,000,000 and Over[b] (N = 2515)
No Coverage	311	6.3	5.2	6.7
\$25 - \$75	39	1.1	0.8	0.6
\$50 - \$150	76	1.7	1.5	1.4
\$100 - \$300	1,998	52.7	44.0	31.4
\$200 - \$600	725	12.9	15.6	13.6
\$500 - \$1500	448	7.6	9.6	8.6
\$1000 - \$3000	1,227	14.7	18.8	30.8
Other	281	3.0	4.6	6.9
Total	5,105	100.0	100.0	100.0

[a] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [b] Includes all counties in SMSAs with 1,000,000 or more inhabitants.

Note: Coverage limits are in Thousands of dollars.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 58—Individual Annual Premium for Professional Liability Insurance by Census Division and Specialty, 1976[a]

Census Division	Total		Specialty							
			Gen. Prac. (N=859)	Int. Med. (N=682)	Surg. (N=1033)	Ped. (N=256)	Ob. Gyn. (N=310)	Rad. (N=196)	Psych. (N=318)	Anes. (N=177)
	N	Mean	Mean							
Total[b]	4,170	$4,714	$3,222	$2,537	$ 7,774	$2,323	$ 8,198	$3,535	$1,140	c
New England	257	2,818	1,606	c	4,665	1,098	5,119	1,922	884	3,460
Middle Atlantic	847	4,957	1,941	2,149	9,160	2,626	9,089	2,626	1,034	10,545
East North Central	743	4,733	2,848	2,227	8,460	1,348	8,860	3,739	1,039	11,999
West North Central	286	3,181	2,518	1,427	4,898	1,293	6,314	2,576	1,681	6,282
South Atlantic	593	3,357	1,378	1,733	6,145	1,222	5,863	2,521	1,710	6,438
East South Central	175	2,784	1,408	885	4,092	1,120	5,798	2,240	990	5,967
West South Central	333	3,577	3,987	2,043	5,811	1,333	4,968	2,289	1,078	4,576
Mountain	214	5,434	4,058	2,274	8,808	c	6,324	2,494	848	7,634
Pacific	696	7,722	7,036	5,098	11,396	3,932	14,925	6,604	1,061	15,731
		Standard Error of the Mean								
Total		101	212	200	228	284	311	246	111	c
New England		373	282	c	371	163	478	322	180	774
Middle Atlantic		236	386	191	614	452	483	359	119	633
East North Central		238	440	310	577	146	750	645	71	1,558
West North Central		205	390	207	479	255	726	611	631	869
South Atlantic		166	157	176	391	199	533	605	690	909
East South Central		211	182	82	324	316	908	410	169	2,810
West South Central		331	1,126	524	569	169	671	347	93	657
Mountain		615	1,151	395	1,490	c	747	381	227	1,171
Pacific		290	634	750	540	594	1,231	676	110	1,366

[a] Data includes individual annual premiums which are zero; [b] Total includes "Other" and "Not Specified" categories; [c] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Physicians' Net Incomes

Average net income from medical practice rose 8.4% from 1974 to 1975 and 5.6% from 1975 to 1976. The percentage increases from 1975 to 1976 by specialty were:

- general practice--4.5%
- internal medicine--6.1%
- surgery--12.5%
- pediatrics--6.1%
- obstetrics-gynecology--3.9%
- radiology--2.8%
- psychiatry--6.1%
- anesthesiology--5.3%

Median net income from medical practice rose 1.5% from 1974 to 1975 and 7.3% from 1975 to 1976. The percentage increases in median income, 1975 to 1976, by specialty were:

- general practice--6.7%
- internal medicine--5.9%
- surgery--8.3%
- pediatrics--6.3%
- obstetrics-gynecology--3.4%
- radiology--6.3%
- psychiatry--6.9%
- anesthesiology--9.4%

In both 1975 and 1976, median net income and average net income from medical practice was highest in metropolitan areas with a population of less than one million persons and second highest in metropolitan areas with a population of at least one million persons.

Table 59—Individual Annual Premium for Professional Liability Insurance by Specialty and Location, 1976[a]

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(n = 649)	Less than 1,000,000[c] (n = 1468)	1,000 000 and over[d] (n = 2032)
Specialty	N	Mean	Mean		
Total[b]	4,170	$ 4,714	$3,974	$4,300	$5,263
General Practice	859	3,222	3,199	3,104	3,383
Internal Medicine	682	2,537	1,834	2,356	2,797
Surgery	1,033	7,774	7,069	6,648	9,049
Pediatrics	256	2,323	e	1,592	2,465
Obstetrics-Gynecology	310	8,198	5,858	6,506	10,140
Radiology	196	3,535	2,662	2,952	4,713
Psychiatry	318	1,140	e	1,071	1,048
Anesthesiology	177	10,596	6,666	8,726	12,208
		Standard Error of the Mean			
Total		101	252	153	153
General Practice		212	367	380	359
Internal Medicine		200	250	418	250
Surgery		228	772	285	364
Pediatrics		284	e	143	290
Obstetrics-Gynecology		311	628	336	508
Radiology		246	381	312	498
Psychiatry		111	e	81	63
Anesthesiology		616	1,120	913	829

[a] Data includes individual annual premiums which are zero; [b] Total includes "Other" and "Not Specified" categories; [c] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [d] Includes all counties in SMSAs with 1,000,000 or more inhabitants. [e] Data do not meet reliability standards.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development. American Medical Association.

Table 60—Average Net Income from Medical Practice by Specialty, 1970-1976[a]

Specialty	Year						
	1970	1971	1972	1973	1974	1975	1976[c]
Total[b]	$41,789	$45,278	$47,240	$48,574	$51,997	$56,361	$59,544
General Practice	33,859	39,823	41,277	41,915	44,727	45,410	47,438
Internal Medicine	40,251	42,869	44,692	47,809	51,390	56,982	60,459
Surgery	50,701	54,045	56,041	57,228	60,510	68,226	73,245
Pediatrics	34,799	38,503	38,879	41,166	42,112	44,250	46,962
Obstetrics-Gynecology	47,094	51,062	53,165	55,357	61,693	63,316	65,800
Psychiatry	39,896	37,248	39,124	38,536	41,258	44,822	47,565
Anesthesiology	39,432	47,293	49,536	48,092	54,365	57,063	60,059

[a] Because of differences in sampling procedure, figures may not be consistent with previously published data for some years.

[b] Physicians whose specialties were classified as "Other" or "Not Specified" are included in this total.

[c] Projected by respondents.

Source: Periodic Survey of Physicians, 1970-1976. Center for Health Services Research and Development, American Medical Association.

Table 61—Average Net Income from Medical Practice by Type of Practice and Specialty, 1975

			Specialty							
	Total		Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
Type of Practice	N	Mean	Mean							
Total[a]	4,036	$56,361	$45,410	$56,982	$68,226	$44,250	$63,316	$75,239	$44,822	$57,063
Solo	2,031	51,638	42,841	52,654	64,274	43,229	55,847	75,280	45,717	54,848
2 Man	399	62,023	51,329	61,052	72,138	53,957	74,781	62,500	41,733	52,000
3 Man	270	66,881	49,825	64,927	82,855	47,815	73,875	72,500	44,167	64,000
4 Man	178	61,062	51,649	61,059	68,233	45,714	72,700	77,154	48,800	56,200
5-7 Man	244	69,422	55,767	57,220	81,694	51,583	72,167	88,400	45,000	56,565
8-25 Man	214	57,785	43,406	57,220	63,548	42,533	62,333	73,563	42,333	59,958
26 Man & Over	180	56,083	47,692	51,875	65,372	44,200	58,765	60,100	50,500	64,143
			Standard Error of the Mean							
Total		482	753	1,124	1,239	1,571	1,733	2,399	1,013	1,653
Solo		667	958	1,606	1,770	2,900	2,644	8,535	1,272	2,645
2 Man		1,494	2,801	2,788	3,209	5,240	5,575	8,009	4,778	4,508
3 Man		2,019	2,772	4,465	4,820	3,928	4,416	6,334	6,553	14,358
4 Man		1,995	3,608	5,745	4,267	5,128	6,193	10,270	6,508	9,881
5-7 Man		2,225	2,984	1,137	8,879	4,204	9,183	4,644	5,239	4,873
8-25 Man		1,763	3,789	1,137	3,997	3,159	8,950	5,174	3,521	3,450
26 Man & Over		1,613	3,215	2,767	4,424	4,253	3,489	4,478	5,818	4,793

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 62—Median Net Income from Medical Practice by Type of Practice and Specialty, 1975

	Total		Specialty							
Type of Practice	N	Median	Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
			Median							
Total[a]	4,036	$50,337	$41,824	$52,125	$60,387	$42,278	$59,977	$70,500	$42,750	$54,500
Solo	2,031	46,406	39,554	47,625	59,611	40,333	50,222	60,333	44,125	50,250
2 Man	399	58,667	49,571	59,667	61,000	50,000	73,000	55,500	41,000	51,500
3 Man	270	62,500	48,000	63,000	79,917	47,000	67,500	65,500	34,500	71,500
4 Man	178	58,500	49,667	62,000	66,000	42,500	71,000	75,000	46,500	50,000
5-7 Man	244	64,929	57,000	52,833	75,000	49,000	70,500	80,889	44,500	54,000
8-25 Man	214	54,000	40,500	52,833	62,500	42,000	51,500	68,500	39,500	56,500
26 Man & Over	180	54,700	49,000	48,500	64,750	44,000	60,000	60,000	51,500	60,500

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 63—Average Projected Net Income from Medical Practice by Type of Practice and Specialty, 1976

	Total		Specialty							
Type of Practice	N	Mean	Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
			Mean							
Total[a]	3,857	$59,544	$47,438	$60,459	$73,245	$46,962	$65,800	$77,322	$47,565	$60,059
Solo	1,937	54,335	44,413	55,393	68,774	45,370	58,000	78,750	48,654	58,887
2 Man	377	65,308	55,632	64,575	77,719	58,864	78,800	50,615	43,000	54,286
3 Man	267	70,614	52,463	68,690	88,565	49,577	77,571	77,400	45,917	48,250
4 Man	176	65,625	53,806	65,000	74,442	49,714	75,600	83,077	54,667	63,200
5-7 Man	231	72,576	57,667	60,725	88,097	50,714	68,727	93,258	47,778	59,391
8-25 Man	203	61,887	47,034	60,725	69,128	47,214	71,000	74,750	45,083	64,000
26 Man & Over	173	59,775	50,308	54,638	69,238	47,929	63,200	64,500	50,200	68,571
		Standard Error of the Mean								
Total		536	840	1,184	1,420	1,701	1,994	2,422	1,233	1,703
Solo		769	1,073	1,691	2,132	3,366	3,147	8,199	1,596	2,963
2 Man		1,623	3,165	2,981	3,581	4,796	6,431	4,806	4,504	4,804
3 Man		2,201	2,973	4,516	5,206	4,149	4,751	6,536	7,129	16,373
4 Man		2,318	3,903	5,891	5,970	5,046	6,752	10,418	8,641	8,212
5-7 Man		2,252	3,085	1,199	8,339	3,548	6,721	5,823	5,562	4,956
8-25 Man		1,885	4,432	1,199	4,516	3,114	10,802	4,781	3,394	3,698
26 Man & Over		1,712	4,429	2,881	4,685	3,711	4,160	4,167	6,711	6,838

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 64—Median Projected Net Income from Medical Practice by Type of Practice and Specialty, 1976

	Total		Specialty							
			Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
Type of Practice	N	Median	Median							
Total[a]	3,857	$54,000	$44,618	$55,190	$65,412	$44,955	$62,000	$74,909	$45,700	$59,600
Solo	1,937	49,406	39,959	49,950	60,179	42,833	50,500	68,500	47,500	55,500
2 Man	377	59,640	49,667	60,333	68,500	55,000	75,000	45,000	40,500	58,000
3 Man	267	66,375	48,333	66,500	79,875	44,833	70,250	76,500	41,000	23,500
4 Man	176	60,206	47,500	60,333	70,250	46,500	71,000	72,000	48,000	60,000
5-7 Man	231	69,542	53,000	55,381	78,000	45,500	75,000	89,750	46,000	56,000
8-25 Man	203	58,000	44,667	55,381	65,375	47,500	61,000	70,500	42,500	60,500
26 Man & Over	173	56,750	50,250	51,667	69,500	43,000	63,000	63,500	49,000	62,000

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 65—Average Net Income from Medical Practice by Census Division and Specialty, 1975

Census Division	Total N	Total Mean	Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
			Specialty							
			Mean							
Total[a]	4,036	$56,361	$45,410	$56,982	$68,226	$44,250	$63,316	$75,239	$44,822	$57,063
New England	259	47,236	34,833	49,074	57,448	40,208	53,100	61,333	38,737	47,000
Mid Atlantic	744	53,191	37,410	53,123	67,433	38,745	65,136	68,350	42,988	57,241
E. N. Central	676	59,888	48,739	60,960	76,467	43,806	63,022	89,636	46,857	55,143
W. N. Central	279	56,559	47,172	57,435	68,387	48,875	69,364	70,750	50,818	58,167
South Atlantic	614	58,155	45,654	59,397	67,034	42,263	68,172	72,839	47,020	54,533
E. S. Central	173	65,497	51,756	64,550	79,943	56,083	68,417	70,750	61,571	66,500
W. S. Central	324	61,410	50,500	61,305	78,000	40,056	63,550	89,261	49,273	52,600
Mountain	213	54,695	43,947	60,680	60,983	48,750	65,563	62,000	45,267	66,000
Pacific	729	54,776	46,711	55,058	62,422	51,298	56,915	74,568	41,899	56,925
		Standard Error of the Mean								
Total		482	753	1,124	1,239	1,571	1,733	2,399	1,013	1,653
New England		1,608	2,711	3,304	4,805	3,417	5,557	4,074	3,688	5,441
Mid Atlantic		1,167	1,757	2,271	3,261	2,467	3,968	5,824	2,315	4,591
E. N. Central		1,261	1,752	2,938	3,441	4,436	3,789	7,358	2,693	3,962
W. N. Central		1,680	2,207	4,668	4,478	4,070	7,078	7,859	5,865	4,451
South Atlantic		1,183	2,111	2,851	2,705	3,208	3,635	5,830	2,288	5,960
E. S. Central		2,461	3,858	5,850	5,185	11,132	10,224	9,283	10,102	7,206
W. S. Central		2,003	2,590	4,524	5,770	5,181	10,399	9,021	3,468	4,036
Mountain		1,931	2,688	6,350	3,941	13,288	9,929	7,865	3,948	5,809
Pacific		996	1,835	2,517	2,270	4,986	2,894	4,719	1,818	3,350

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 66—Median Net Income from Medical Practice by Census Division and Specialty, 1975

	Total		Specialty							
			Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
Census Division	N	Median	Median							
Total[a]	4,036	$50,337	$41,824	$52,125	$60,387	$42,278	$59,977	$70,500	$42,750	$54,500
New England	259	44,333	30,100	44,500	50,500	42,500	50,167	60,333	40,000	50,000
Mid Atlantic	744	48,214	37,000	49,500	60,143	39,750	56,500	75,500	40,167	50,000
E. N. Central	676	54,200	45,500	59,778	70,500	38,000	60,250	75,500	44,667	51,500
W. N. Central	279	50,429	42,750	50,167	65,500	48,500	70,000	63,000	49,000	55,500
South Atlantic	614	53,167	40,000	58,333	60,286	40,000	68,500	69,750	44,500	48,000
E. S. Central	173	60,139	49,000	61,500	75,000	51,500	60,500	62,500	55,000	66,000
W. S. Central	324	57,250	50,000	59,000	71,000	38,500	51,000	81,000	49,000	52,500
Mountain	213	50,000	38,250	54,000	59,500	57,500	60,167	65,000	49,750	65,000
Pacific	729	50,082	43,667	50,071	59,650	48,333	59,750	70,250	41,000	56,500

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 67—Average Projected Net Income from Medical Practice by Census Division and Specialty, 1976

Census Division	Total		Specialty							
			Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
	N	Mean	Mean							
Total[a]	3,857	$59,544	$47,438	$60,459	$73,245	$46,962	$65,800	$77,322	$47,565	$60,059
New England	246	49,329	35,023	52,250	61,418	42,045	51,316	66,077	39,444	43,400
Mid Atlantic	704	55,830	38,436	54,048	73,415	40,574	66,452	72,150	44,737	57,630
E. N. Central	642	63,698	51,626	64,194	84,285	47,774	65,205	89,571	49,408	59,148
W. N. Central	266	60,128	49,714	61,370	74,696	49,875	74,800	79,273	52,600	62,250
South Atlantic	588	61,122	45,182	64,102	71,362	44,216	71,804	75,655	50,638	59,692
E. S. Central	169	69,195	56,795	67,789	85,792	62,308	71,364	65,857	59,857	59,750
W. S. Central	309	63,845	51,720	65,500	80,516	43,000	70,750	83,409	51,211	58,200
Mountain	205	57,541	47,340	62,080	64,345	53,250	61,375	69,273	45,867	67,909
Pacific	705	58,584	49,596	60,730	65,223	53,644	61,457	78,784	47,138	62,282
		Standard Error of the Mean								
Total		536	840	1,184	1,420	1,701	1,994	2,422	1,233	1,703
New England		1,853	3,118	3,735	5,733	2,860	5,372	5,200	4,379	7,033
Mid Atlantic		1,346	1,944	2,379	3,928	2,578	4,523	5,552	2,518	4,000
E. N. Central		1,452	1,828	3,257	4,283	4,361	4,460	8,000	2,560	5,156
W. N. Central		1,844	2,300	5,054	4,947	4,182	9,601	9,094	8,089	2,697
South Atlantic		1,256	2,227	2,861	2,871	3,384	4,094	5,812	2,494	5,692
E. S. Central		2,632	4,204	6,081	5,796	9,286	8,509	10,227	9,468	8,543
W. S. Central		2,034	2,886	4,577	5,508	4,940	11,937	8,934	3,520	5,495
Mountain		2,050	3,277	6,233	4,484	14,534	8,223	7,999	4,574	5,875
Pacific		1,147	2,244	2,658	2,392	6,079	4,582	5,120	3,432	3,343

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 68—Median Projected Net Income from Medical Practice by Census Division and Specialty, 1976

	Total		Specialty							
			Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
Census Division	N	Median	Median							
Total[a]	3,857	$54,000	$44,618	$55,190	$65,412	$44,955	$62,000	$74,909	$45,700	$59,600
New England	246	45,269	30,071	45,500	54,750	45,000	50,000	65,000	35,500	45,000
Mid Atlantic	704	49,810	37,250	49,875	66,000	42,000	60,250	75,500	44,750	50,333
E. N. Central	642	56,333	48,500	60,167	74,750	46,750	65,000	79,750	48,000	59,667
W. N. Central	266	54,808	45,500	53,000	72,500	50,000	71,500	89,000	47,500	60,000
South Atlantic	588	55,500	41,600	60,375	65,500	42,250	75,500	75,000	51,000	51,000
E. S. Central	169	64,556	51,750	65,000	80,083	54,000	73,000	61,000	59,000	65,000
W. S. Central	309	59,714	48,000	60,250	70,500	41,000	58,500	75,500	51,000	51,000
Mountain	205	53,000	42,250	55,250	60,100	57,500	64,500	75,000	46,000	70,000
Pacific	705	54,250	45,250	55,167	62,000	46,000	59,700	74,667	43,250	64,000

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 69—Average Net Income from Medical Practice by Specialty and Location, 1975

			Location		
			Nonmetropolitan	Metropolitan	
	Total		(N = 656)	Less than 1,000,000[b] (N = 1406)	1,000,000 and over[c] (N = 1954)
Specialty	N	Mean	Mean		
Total[a]	4,036	$56,361	$52,377	$59,520	$55,638
General Practice	879	45,410	45,959	46,407	44,381
Internal Medicine	664	56,982	55,400	59,885	55,717
Surgery	948	68,226	63,865	70,316	68,035
Pediatrics	244	44,250	44,560	45,735	43,274
Obstetrics-Gynecology	297	63,316	56,361	62,378	66,248
Radiology	176	75,239	63,278	83,716	73,356
Psychiatry	326	44,822	40,091	47,235	44,493
Anesthesiology	158	57,063	49,650	60,979	56,622
		Standard Error of the Mean			
Total		482	1,013	848	701
General Practice		753	1,436	1,315	1,194
Internal Medicine		1,124	3,040	2,103	1,460
Surgery		1,239	2,565	1,943	1,959
Pediatrics		1,571	3,560	2,450	2,322
Obstetrics-Gynecology		1,733	4,059	2,920	2,442
Radiology		2,399	4,194	4,574	3,155
Psychiatry		1,013	2,612	1,863	1,293
Anesthesiology		1,653	3,073	2,869	2,337

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSA's with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 70—Median Net Income from Medical Practice by Specialty and Location, 1975

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
			(N = 656)	Less than 1,000,000[b] (N = 1406)	1,000,000 and over[c] (N = 1954)
	N	Median	Median		
Total[a]	4,036	$50,337	$48,286	$54,661	$50,126
General Practice	879	41,824	41,900	43,000	40,421
Internal Medicine	664	52,125	48,500	59,550	50,283
Surgery	948	60,387	58,250	60,500	60,750
Pediatrics	244	42,278	46,000	45,333	40,000
Obstetrics-Gynecology	297	59,977	52,500	59,250	60,458
Radiology	176	70,500	60,167	75,333	75,000
Psychiatry	326	42,750	40,000	49,333	41,000
Anesthesiology	158	54,500	48,500	55,500	56,500

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSA's with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 71—Average Projected Net Income from Medical Practice by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
			(N = 625)	Less than 1,000,000[b] (N = 1358)	1,000,000 and over[c] (N = 1854)
	N	Mean	Mean		
Total[a]	3,857	$59,544	$54,571	$63,158	$58,819
General Practice	837	47,438	48,365	49,016	45,737
Internal Medicine	643	60,459	56,397	63,143	59,807
Surgery	899	73,245	66,697	76,426	72,665
Pediatrics	236	46,962	47,720	49,829	44,953
Obstetrics-Gynecology	280	65,800	58,939	65,774	67,992
Radiology	171	77,322	66,886	85,063	75,514
Psychiatry	308	47,565	42,762	47,695	48,138
Anesthesiology	152	60,059	50,900	63,426	60,353
		Standard Error of the Mean			
Total		536	1,088	947	782
General Practice		840	1,511	1,507	1,370
Internal Medicine		1,184	2,931	2,230	1,542
Surgery		1,420	2,940	2,259	2,210
Pediatrics		1,701	4,222	2,447	2,587
Obstetrics-Gynecology		1,994	4,874	3,187	2,937
Radiology		2,422	4,802	4,663	3,050
Psychiatry		1,233	3,179	2,005	1,643
Anesthesiology		1,703	3,248	3,120	2,354

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSA's with 1,000,000 or more inhabitants.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

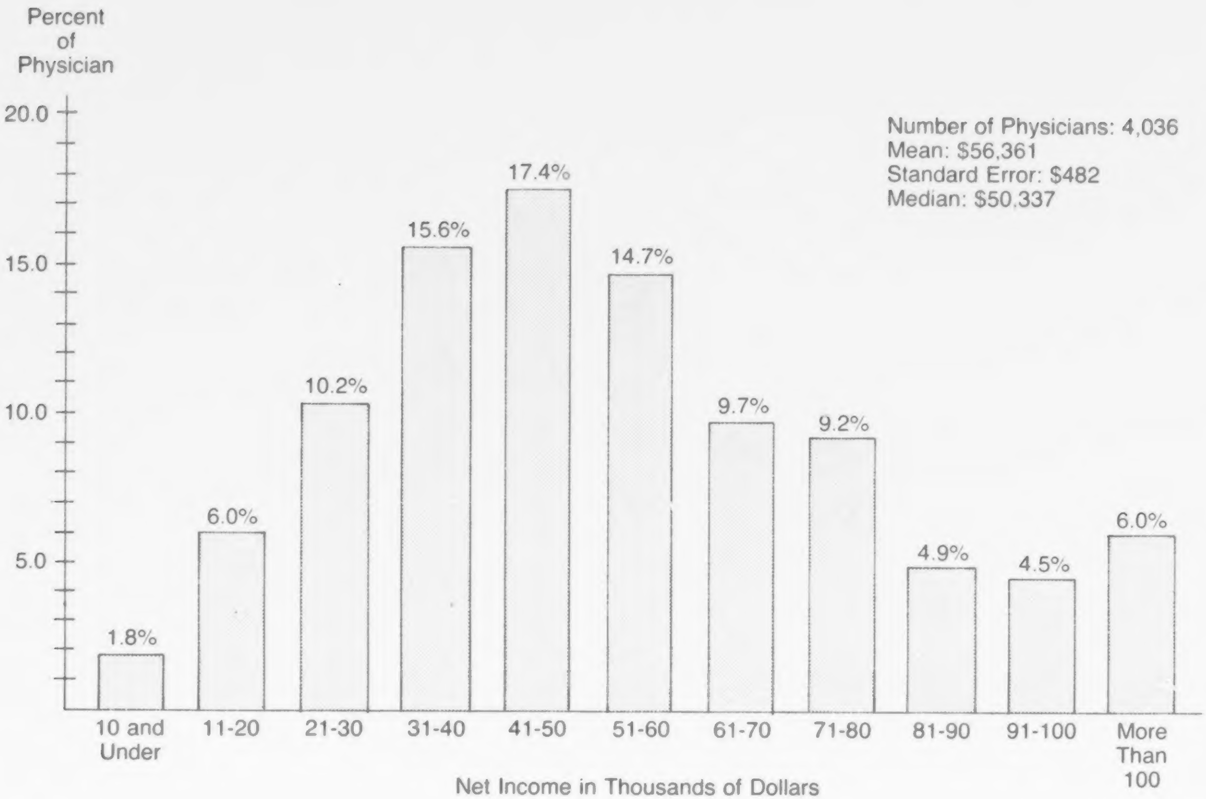
Table 72—Median Projected Net Income from Medical Practice by Specialty and Location, 1976

Specialty	Total		Location		
			Nonmetropolitan	Metropolitan	
			(N = 625)	Less than 1,000,000[b] (N = 1358)	1,000,000 and over[c] (N = 1854)
	N	Median	Median		
Total[a]	3,857	$54,000	$49,671	$57,071	$52,900
General Practice	807	44,618	44,654	47,250	41,786
Internal Medicine	643	55,190	49,929	60,000	54,875
Surgery	899	65,412	60,333	69,900	65,500
Pediatrics	236	44,955	45,000	49,625	42,100
Obstetrics-Gynecology	280	62,000	64,000	60,000	64,000
Radiology	171	74,909	60,333	78,500	75,071
Psychiatry	308	45,700	40,333	49,000	45,458
Anesthesiology	152	59,600	50,000	60,250	59,857

[a] Total includes "Other" and "Not Specified" categories; [b] Includes all counties in SMSAs with 50,000 to 999,999 inhabitants and all counties considered potential SMSAs; [c] Includes all counties in SMSA's with 1,000,000 or more inhabitants.

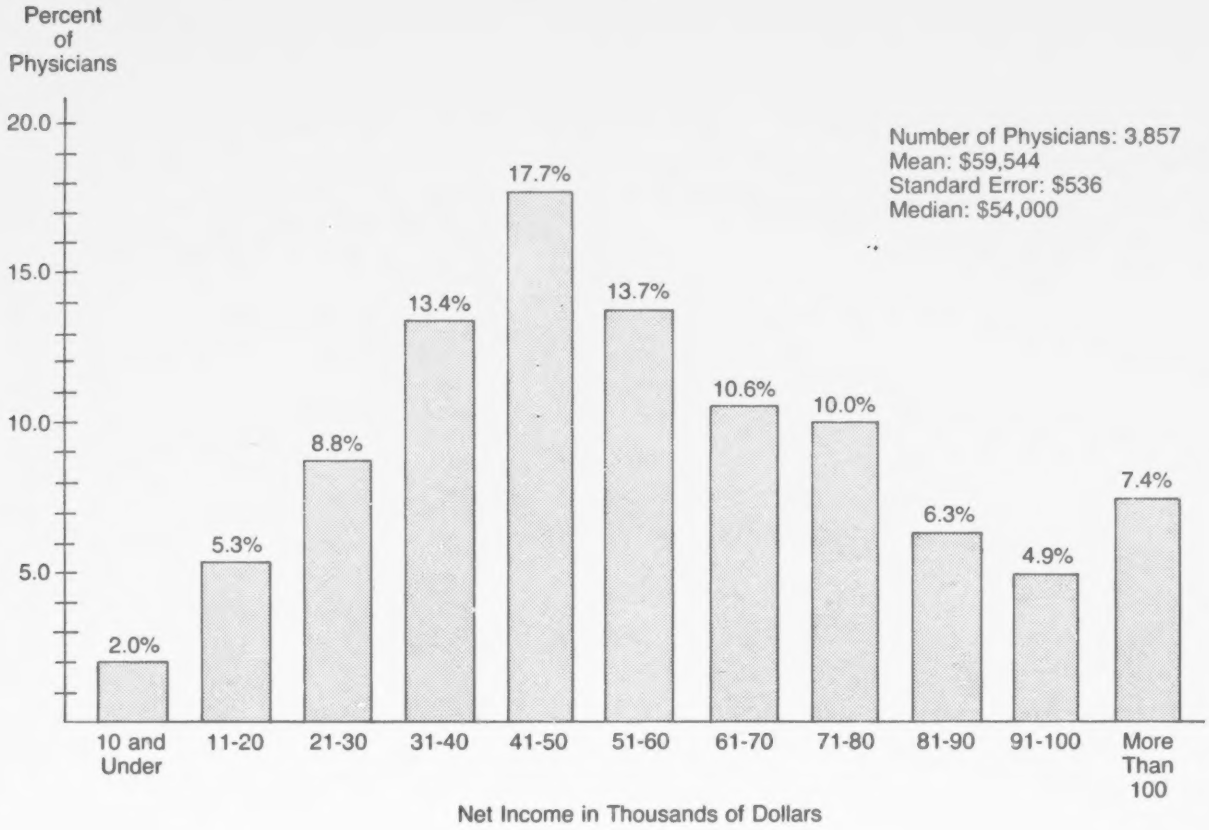
Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 8—Percentage Distribution of U.S. Physicians by Net Income from Medical Practice, 1975



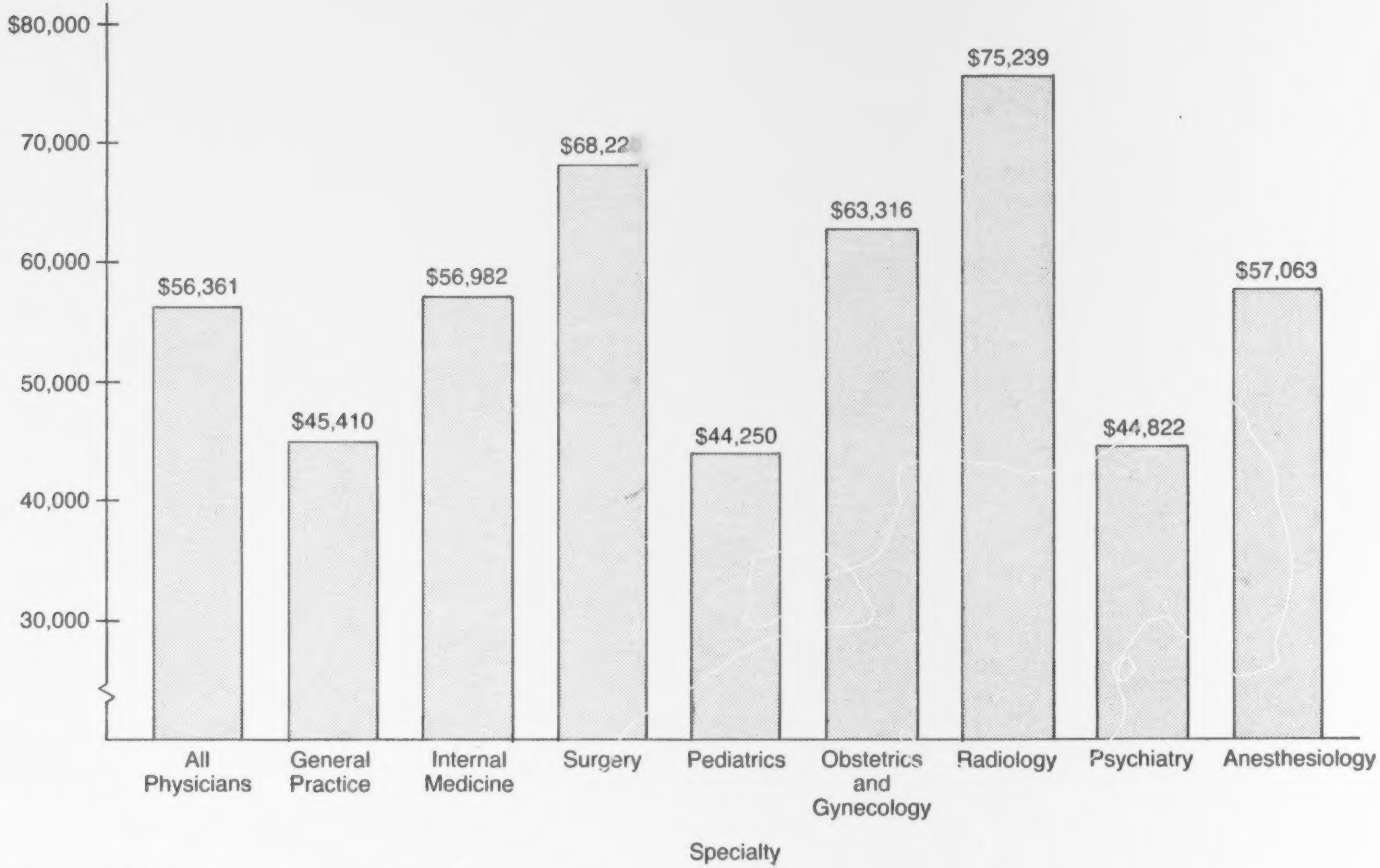
Source: Eleventh Periodic Survey of Physicians. November 1976.
Center for Health Services Research and Development,
American Medical Association.

Figure 9—Percentage Distribution of U.S. Physicians by Projected Net Income from Medical Practice, 1976



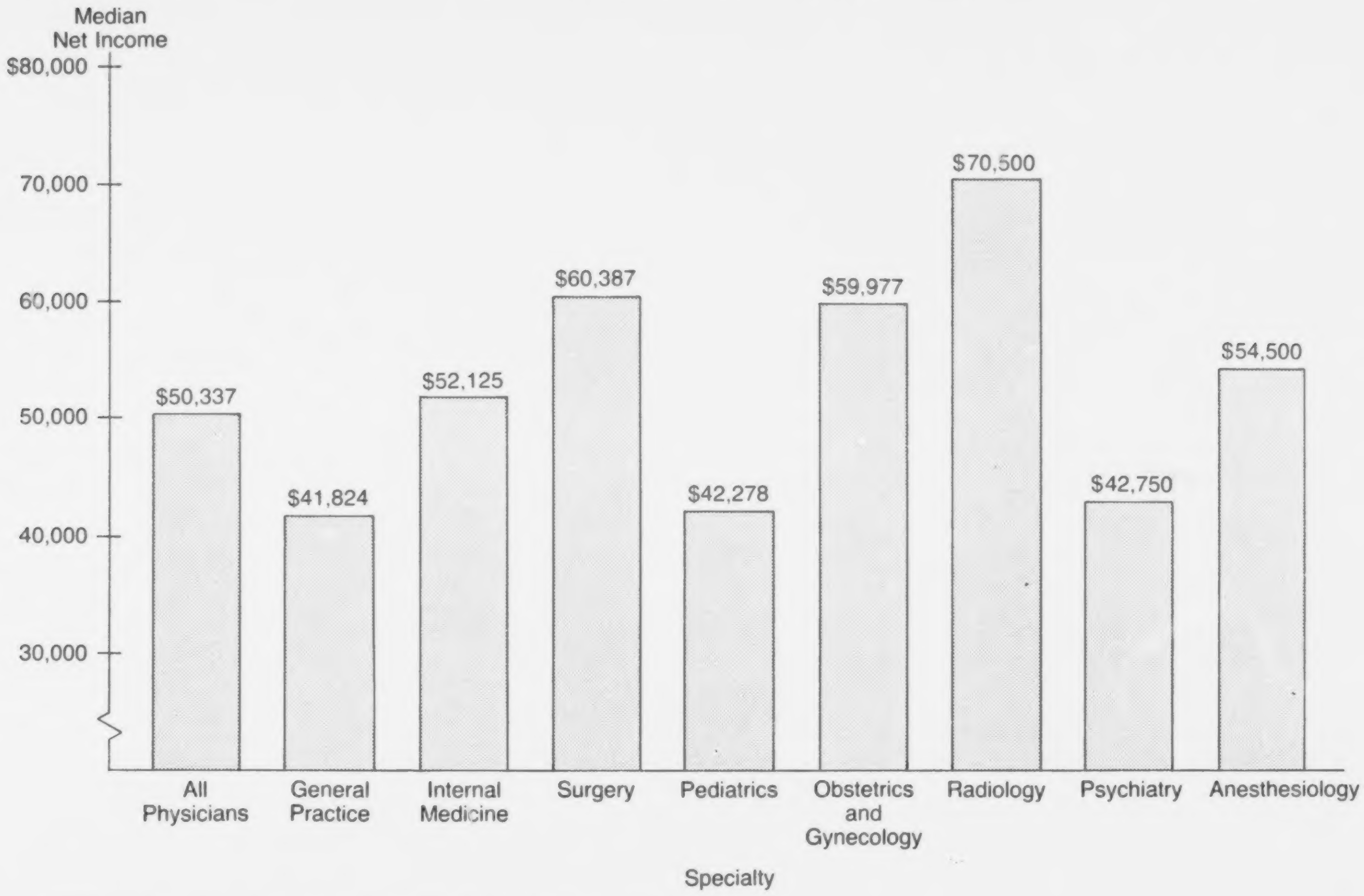
Source: Eleventh Periodic Survey of Physicians. November 1976.
Center for Health Services Research and Development,
American Medical Association.

Figure 10—Mean Net Income from Medical Practice by Specialty, 1975



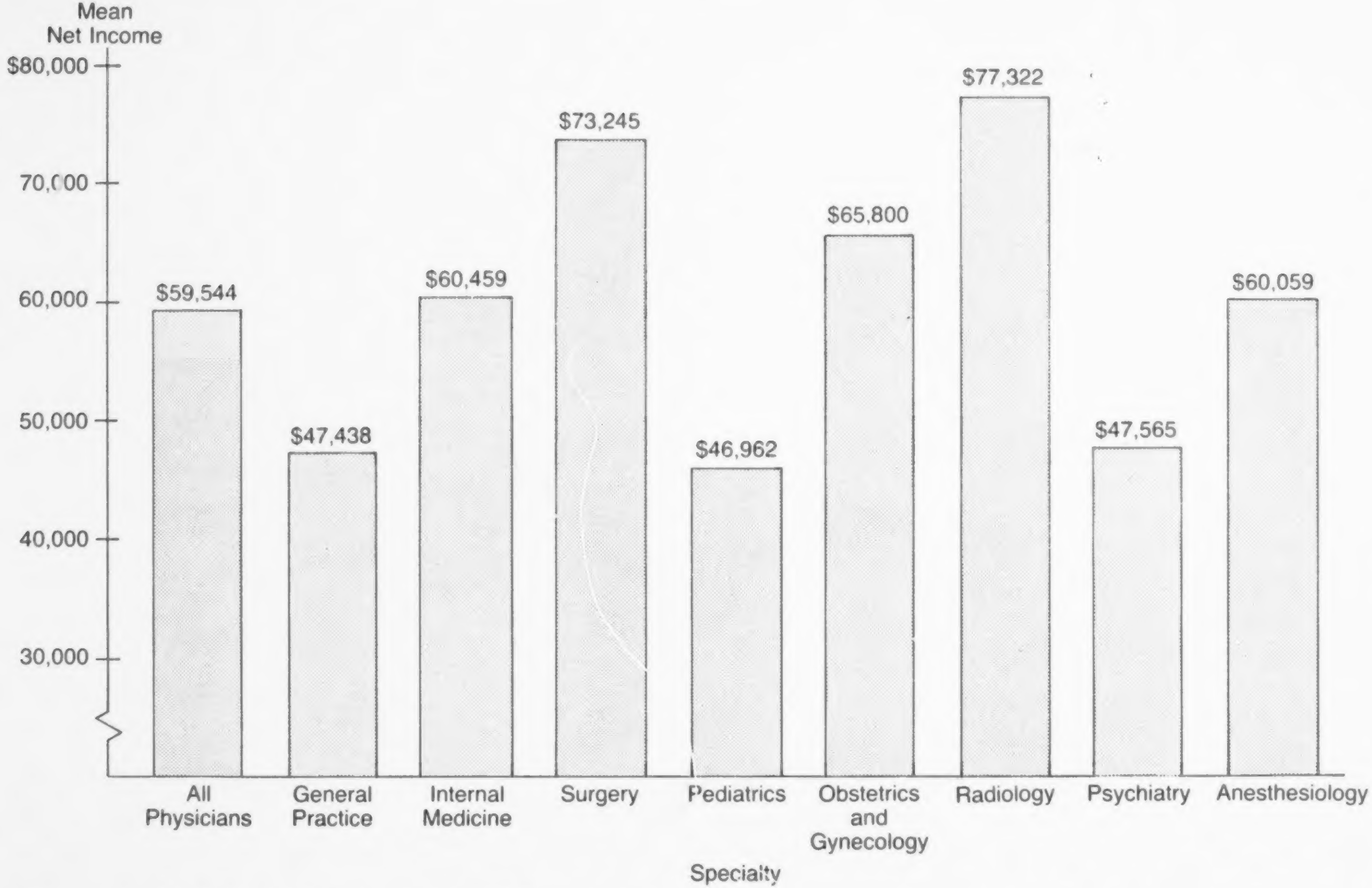
Source: Eleventh Periodic Survey of Physicians. November 1976.
Center for Health Services Research and Development,
American Medical Association.

Figure 11—Median Net Income from Medical Practice by Specialty, 1975



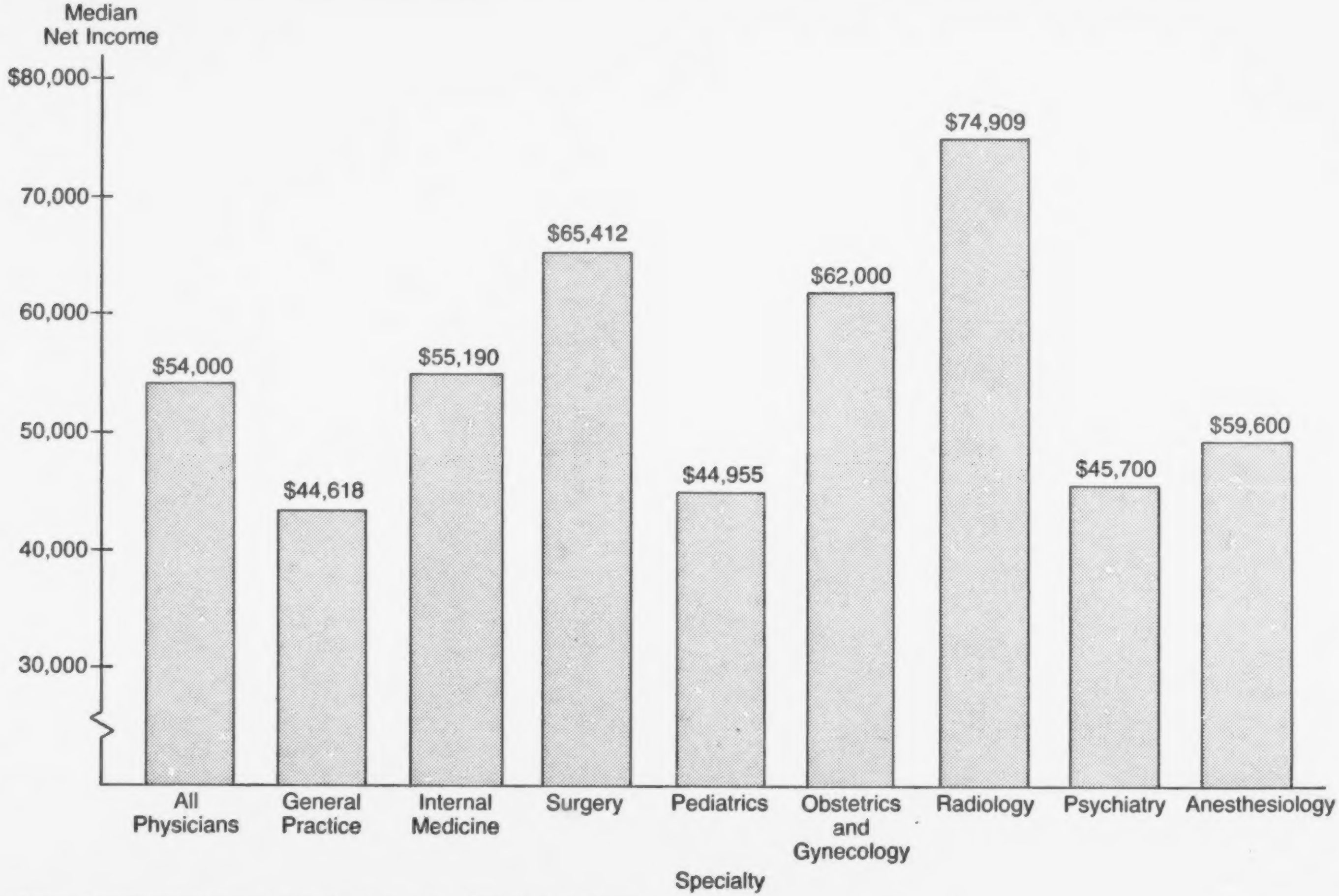
Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 12—Mean Projected Net Income from Medical Practice by Specialty, 1976



Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Figure 13—Median Projected Net Income from Medical Practice by Specialty, 1976



Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 74—Median Net Income from Medical Practice by Age of Physician and Specialty, 1975

	Total		Specialty							
			Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
Age (Years)	N	Median	Median							
Total[a]	4,036	$50,337	$41,824	$52,125	$60,387	$42,278	$59,977	$70,500	$42,750	$54,500
35 and Under	335	39,625	37,250	34,625	44,667	33,000	43,000	42,500	35,500	55,000
36-40	536	55,100	45,200	59,917	64,500	44,500	68,500	74,000	40,500	50,500
41-45	637	59,889	49,889	60,313	69,938	49,833	56,000	79,857	50,000	50,500
46-50	580	59,870	53,500	58,500	74,900	45,500	66,250	75,500	44,750	66,000
51-60	1,140	54,346	45,357	59,719	64,722	45,250	63,500	72,000	44,667	55,500
61 and Over	808	39,611	31,900	40,278	48,375	32,167	42,500	64,750	32,750	39,500

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Appendix

1976 Periodic Survey of Physicians Questionnaire

PERIODIC SURVEY OF PHYSICIANS

CENTER FOR HEALTH SERVICES RESEARCH AND DEVELOPMENT

American Medical Association
535 North Dearborn Street
Chicago, Illinois 60610

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Dear Doctor:

In its efforts to obtain reliable information on the practice of medicine, the American Medical Association instituted the Periodic Survey of Physicians in 1966. Results from each survey have been published annually in the Profile of Medical Practice. The cooperation exhibited by the responding physicians demonstrates that the profession is willing to participate in the development of valid, reliable data on medical practice.

Your assistance is now being sought so that the series may be broadened to include both new information and larger segments of the profession. The results will enable the calculation of national, regional, and specialty averages with stated reliability. These surveys have been very useful in representing the physician's practice situation. All responses will be handled in the strictest confidence and only aggregate figures will be published.

The success of this survey and, therefore, its usefulness to the individual physician and to the profession depends on your reply. Your cooperation on this important project is greatly appreciated.

Sincerely,

James H Sammons

James H. Sammons, M.D.
Executive Vice President

A. PRACTICE CHARACTERISTICS

1. Please give the SPECIALTY from which you derived 50% or more of your 1975 MEDICAL income: ______ 12-14

2. Is your practice organized as a PROFESSIONAL CORPORATION?
Yes .... ☐ 15-1
No .... ☐ 15-2

3. From which TYPE OF PRACTICE did you derive 50% or more of your 1975 **MEDICAL** income? *(Please check only one.)*

a. Solo practice .... ☐ 16-1
b. Partnership or group .... ☐ 16-2
(Total number of physicians including yourself ...... ______ 17-19)
c. Informal expense sharing arrangement .... ☐ 16-3
(Total number of physicians including yourself ...... ______ 20-22)
d. Other *(Please describe.)* ______ ☐ 16-4
(Total number of physicians including yourself ...... ______ 23-25)

4. How many WEEKS did you practice in 1975? *(EXCLUDE medical meetings, military service, vacations and similar absences from practice.)* .... ______ 26-27 Weeks

5. How many TOTAL HOURS did you practice during your most recent **COMPLETE** week of practice? *(EXCLUDE "on-call" hours not actually worked.)* .... ______ 28-30 Hours

6. How many of these HOURS were spent in providing direct **PATIENT CARE** or patient-related services? *(INCLUDE interpreting X-rays, lab tests, etc. EXCLUDE administrative tasks, meetings, etc.)* ..... ______ 31-33 Hours

7. How many HOURS did you spend in the following activities during your most recent **COMPLETE WEEK** of practice?

a. Seeing patients in office .... ______ 34-36 Hours
b. Making hospital rounds .... ______ 37-39 Hours
c. In business administration activities (employee supervision, filling out insurance forms, etc.) ..... ______ 40-42 Hours

8. How many PATIENT VISITS did you have during your most recent **COMPLETE WEEK** of practice?

a. At the office .... ______ 43-45 Visits
b. At the hospital .... ______ 46-48 Visits
c. At all other facilities .... ______ 49-51 Visits

9. Please give the approximate time that a patient wishing to see you has to wait:

a. To be scheduled for a routine office visit ...... ______ 52-54 Days, *OR* ______ Weeks
b. To see you after arriving for a scheduled appointment ...... ______ 55-57 Minutes, *OR* ______ Hours

10. Do you use a computer *(not an office accounting machine)* in your practice?
Yes .... ☐ 58-1 Seriously Considering ...... ☐ 58-2 No .... ☐ 58-3

a. If *yes*, for which of the following applications do you use it?

(Check as many as apply.)

Clinical (e.g., ECG analyses, laboratory, etc.) .... ☐ 59-1
Medical Records (e.g., chart abstracts for individual patients) .... ☐ 60-1
Practice Management (e.g., practice profile statistics) .... ☐ 61-1
Financial Services (e.g., billing) .... ☐ 62-1

b. If you presently use a computer in your practice, do you: *(Please check only one.)*
Own it .... ☐ 63-1 Use data processing service bureau .... ☐ 63-3
Rent/Lease it .... ☐ 63-2 Other ______ ☐ 63-4
(Please specify.)

B. PROFESSIONAL LIABILITY

Please answer the following questions concerning *professional liability insurance.*

1. What are the coverage limits on your 1976 policy?

No coverage .... ☐ 64-1
$25,000/75,000 .... ☐ 64-2
$50,000/$150,000 .... ☐ 64-3
$100,000/$300,000 .... ☐ 64-4
$200,000/$600,000 .... ☐ 64-5
$500,000/$1,500,000 .... ☐ 64-6
$1,000,000/$3,000,000 .... ☐ 64-7
$ ____________ ☐ 64-8
Other (*Please specify*)

2. If you have an additional "umbrella" policy, what is the upper limit on that coverage .... $______,000.00
05-09

3. What is your 1976, individual, per annum premium? .... $______.00 80/1
70-74

4. Have recent increases in your professional liability premiums influenced you to do any of the following?
(Please check as many as apply.)

Change your geographic location .... ☐ 12
Change your primary specialty .... ☐ 13
Not accept certain types of cases .... ☐ 14
Prescribe additional laboratory tests or x-rays .... ☐ 15
Increase your fees .... ☐ 16
(estimated percentage increase .... ______%)
17-19
Accept full-time Federal, State, or University employment .... ☐ 20
Terminate professional liability insurance .... ☐ 21
Permanently terminate practice .... ☐ 22
Other *(Please specify.)* ____________ ☐ 23

5. Have you ever had a malpractice claim filed against you?

Yes .... ☐ 24-1 No .... ☐ 24-2

C. INCOMES AND EXPENSES

1. What was your GROSS INCOME from MEDICAL PRACTICE in 1975 to the nearest $1,000? *(INCLUDE all income from fees, salaries, retainers, etc. BEFORE expenses and taxes, as well as the value of all fringe benefits paid on your behalf, e.g. Keogh Plan. If in practice with other physicians, give only YOUR share of the practice's gross income.)*

1975 Gross Income = $______,000
25-27

PROJECTED 1976 Gross Income = $______,000
28-30

2. What were your total PROFESSIONAL EXPENSES in 1975 to the nearest $1,000? *(INCLUDE only those expenses that are allowable business deductions for Federal income tax purposes. If in practice with other physicians, give only YOUR share of the practice's expenses.)*

1975 Professional Expenses = $______,000
31-33

PROJECTED 1976 Professional Expenses = $______,000
34-36

3. What was your 1975 INDIVIDUAL NET INCOME BEFORE TAXES from medical practice to the nearest $1,000?

1975 Individual Net Income Before Taxes = $______,000
37-39

PROJECTED 1976 Individual Net Income Before Taxes = $______,000
40-42

Table 73—Average Net Income from Medical Practice by Age of Physician and Specialty, 1975

Age (Years)	Total		Specialty							
			Gen. Prac. (N=879)	Int. Med. (N=664)	Surg. (N=948)	Ped. (N=244)	Ob. Gyn. (N=297)	Rad. (N=176)	Psych. (N=326)	Anes. (N=158)
	N	Mean	Mean							
Total[a]	4,036	$56,361	$45,410	$56,982	$68,226	$44,250	$63,316	$75,239	$44,822	$57,063
35 and Under	335	43,746	40,770	36,327	56,313	32,385	49,211	51,773	36,500	58,923
36-40	536	60,868	51,433	63,650	68,185	44,563	71,283	75,710	43,130	57,150
41-45	637	64,535	53,822	65,232	75,385	51,263	63,922	85,968	52,660	54,688
46-50	580	64,797	54,262	62,581	80,209	48,735	74,467	78,214	49,379	64,037
51-60	1,140	58,667	47,365	61,503	72,708	49,431	67,233	80,439	46,010	57,635
61 and Over	808	42,847	34,358	45,303	50,957	35,833	43,960	69,696	34,765	45,071
		Standard Error of the Mean								
Total		482	753	1,124	1,239	1,571	1,733	2,399	1,013	1,653
35 and Under		1,435	2,636	2,578	5,036	2,293	7,201	4,865	2,907	5,900
36-40		1,271	3,217	3,011	2,680	3,026	3,807	5,254	2,375	5,072
41-45		1,202	2,270	2,703	2,775	3,105	3,443	6,400	2,228	3,224
46-50		1,272	1,835	3,046	3,324	3,385	4,772	4,288	2,716	3,926
51-60		925	1,206	1,954	2,750	4,269	3,253	5,253	1,719	3,069
61 and Over		911	1,265	2,450	2,103	3,434	3,565	7,111	2,560	3,973

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 75—Average Projected Net Income from Medical Practice by Age of Physician and Specialty, 1976

			Specialty								
	Total		Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
Age (Years)	N	Mean	Mean							
Total[a]	3,857	$59,544	$47,438	$60,459	$73,245	$46,962	$65,800	$77,322	$47,565	$60,059
35 and Under	327	53,480	48,433	44,712	71,460	38,342	62,353	61,609	51,700	63,308
36-40	504	66,526	55,338	70,701	74,664	50,200	76,523	80,621	48,238	60,500
41-45	606	67,653	55,180	68,198	81,500	52,000	65,783	88,655	52,627	59,581
46-50	570	67,432	55,634	65,671	85,850	48,939	76,326	75,481	52,386	68,963
51-60	1,098	61,209	49,352	64,376	77,065	53,508	69,049	81,625	47,989	56,423
61 and Over	752	42,556	34,116	45,215	50,399	34,571	42,775	69,261	33,354	50,333
		Standard Error of the Mean								
Total		536	840	1,184	1,420	1,701	1,994	2,422	1,233	1,703
35 and Under		1,766	2,620	2,851	6,054	2,260	9,517	5,624	9,799	6,730
36-40		1,415	4,190	3,293	2,983	3,012	3,670	5,174	2,561	5,495
41-45		1,355	2,391	2,754	3,294	3,284	3,913	7,280	2,276	2,935
46-50		1,369	1,976	3,184	3,636	3,002	5,373	4,179	2,894	4,066
51-60		1,023	1,316	2,016	3,143	4,904	4,020	5,107	1,805	2,804
61 and Over		990	1,432	2,592	2,258	3,590	3,864	6,996	2,767	7,234

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

Table 76—Median Projected Net Income from Medical Practice by Age of Physician and Specialty, 1976

Age (Years)	Total N	Total Mean	Gen. Prac. (N=837)	Int. Med. (N=643)	Surg. (N=899)	Ped. (N=236)	Ob. Gyn. (N=280)	Rad. (N=171)	Psych. (N=308)	Anes. (N=152)
			Mean							
Total[a]	3,857	$54,000	$44,618	$55,190	$65,412	$44,955	$62,000	$74,909	$45,700	$59,600
35 and Under	327	47,850	46,000	45,500	60,000	39,900	57,750	54,750	40,500	60,250
36-40	504	60,079	49,600	67,750	69,583	45,500	72,167	80,000	48,000	51,000
41-45	606	61,500	50,500	65,500	70,500	50,375	60,500	83,000	51,000	59,667
46-50	570	60,425	53,333	59,889	79,857	48,000	66,250	75,125	47,750	70,250
51-60	1,098	54,984	46,083	60,056	70,083	46,250	65,250	75,500	46,750	55,000
61 and Over	752	39,595	30,433	40,350	47,917	33,000	42,000	70,250	32,500	54,000

[a] Total includes "Other" and "Not Specified" categories.

Source: Eleventh Periodic Survey of Physicians. November 1976. Center for Health Services Research and Development, American Medical Association.

D. FEE INFORMATION

1. Do you have a fee-for-service practice?
   Yes . . . . ☐ 43-1
   No . . . . ☐ 43-2

IF YOU DO *NOT* HAVE ANY FEE-FOR-SERVICE, PLEASE RETURN THIS QUESTIONNAIRE WITHOUT ANY FURTHER ANSWERS.

2. Are your fees determined with the aid of a relative value scale?
   Yes: ____________________________ ☐ 44-1 No . . . . ☐ 44-2
   Name and Year of Scale (45-46)

3. For each of the following procedures, please indicate your *current usual FEE and the estimated number performed in a typical week*. The procedures are identified by their 1974 California Relative Value (CRV) Studies code numbers.

	Estimated Number performed in a typical week	Current Usual Fee	
a. Office visit, NEW patient, *brief evaluation, history, examination and/or treatment* (CRV 90000)	________ 47-49	$________ 50-54	
b. Office visit, ESTABLISHED patient, *brief examination, evaluation and/or treatment, same or new illness* (CRV 90040)	________ 55-57	$________ 58-62	
c. Periodic or annual type examination, established patient, adult, *exclude lab, x-ray* (CRV 90088)	________ 63-65	$________ 66-70	
d. Hospital visit, new or established patient, *brief examination, evaluation and/or treatment, same illness* (CRV 90240)	________ 71-73	$________ 74-78	80/2
e. Complete blood cell count (CBC), *manual, rbc, wbc, hgb, hct, and differential* (CRV 85031)	________ 12-14	$________ 15-19	
f. Complete urinalysis, *routine* (CRV 81000)	________ 20-22	$________ 23-27	
g. Appendectomy (CRV 44950)	________ 28-30	$________ 31-35	
h. Tonsillectomy, *under 12 years* (CRV 42840)	________ 36-38	$________ 39-43	
i. Total obstetrical care (CRV 59400)	________ 44-46	$________ 47-51	
j. X-ray of upper gastrointestinal tract (CRV 74242)	________ 52-54	$________ 55-59	
k. X-ray of forearm, *including one joint* (CRV 73090)	________ 60-62	$________ 63-67	80/3

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